# Telephony.

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## Emergency Value of Dual System.

When the city of Paris lost its telephone exchange by fire, business all over Europe was crippled for nearly a month. There was no substitute for the long distance wires which were lost to use through the destruction of their terminal apparatus and the local switchboard for connecting them to subscribers' lines. Happily such a condition could not exist in many American cities, because they have two telephone systems. During the past few weeks many lines have been broken by storms; and the inestimable value of an alternative means of speedy communication, open to the habitual users of one group of lines, has been brought home forcibly to business men.

A case in point is that of Rochester, N. Y. Under the heading, "Dual Telegraph and Telephone Lines Valuable in Storm", the Rochester *Times* of February 17 says:

"The storm and sleet of yesterday and the preceding night worked havoc with the telegraph wires of both the Western Union and Postal Telegraph companies, and for hours some points of the country were shut off on the lines of either one company or the other. Invariably, however, if a city could not be reached through one company, it could through the other, because of the dual system of construction. Had there been but one company, it seems certain some large cities could not have been reached by telegraph at all yesterday from this city.

"Somewhat similar troubles were experienced by the Bell and Independent long distance lines, but there were few instances in which one could not talk with a distant point on one system if the other was in trouble. Little trouble was experienced on the local lines of the telephone companies, probably because of the improved overhead construction and use of conduits."

The people of Rochester have had many occasions to congratulate themselves on the existence of an Independent exchange; but the testimony quoted above shows that conservative business men have reason to consider its presence not only an advantage, but in fact almost a necessity.

## A Line of Development.

While local telephone companies are planning many improvements for their exchange systems, to be made during the coming year, a large number of them are devoting a great deal more attention than in any previous period to the subject of

long distance connections. In many states there are now operating long distance companies which are in a position to give a more or less comprehensive toll service, over well built lines. Most of these Independent long distance lines are substantially erected, and laid out to make the routing of messages advantageous to all connecting companies. Several states which have clearing houses have already issued not only toll line maps, but tariff and route books covering a large proportion of the exchanges, and also circuit maps. Among these may be mentioned Michigan, Ohio, and Nebraska. The Independent long distance service of Iowa is conducted on an orderly and profitable basis, while Indiana, although its clearing house has been in existence less than a year, has already issued a tariff and route book, and will very soon bring out a map. Other states are in a stage of development which shows a tendency to advance along the same lines as those which have already made so much progress through the organization of exclusively long distance companies and clearing houses.

The building of short-haul toll lines will go ahead rapidly in many sections of the country during the next six months It is fortunate that the Independent companies, through their state organizations, have come to see the importance not only for each one to reach its neighbors at a distance of from twenty to one hundred miles, but have foreseen the possibility of doing a certain amount of long-haul business also. The laying out of toll lines is, therefore, done, to a large extent, after consultation between the managers of a large number of exchanges, so that as time goes on the whole Independent telephone system of a state becomes more and more closely united as an operating unit. This policy of working for the good of others, as well as for the exchanges inaugurating a particular work, results in a high grade of service, including good transmission, and makes it possible to adopt economical operating methods.

A considerable factor in future Independent development will be due to the reversion to the ranks of companies which, although in sympathy with the Independent movement, have from motives of self-preservation, or immediate profit, allowed the toll lines of the Bell company to be carried into their exchanges. These companies have become restless under the efforts to exploit them for profits on equipment, superseding charges for rental of instruments which they believed were unduly high, and also at territorial limitations and other restrictions. One Bell company has openly referred to these as "tributary" companies, and they resent the assumption of superiority, as well as more direct efforts to exploit them for financial profit. Many of them have reported to TELEPHONY and caused it to be known to Independent telephone men, that they are ready now to join quietly in a movement to provide proper toll line connections over the management and profits of which they may have their proportionate control.

The development of a state toll system is so complicated a task that it cannot be carried on in a hit-or-miss fashion, with no regard for the needs of a period beyond the immediate future, and in so far as their meetings have helped to make this clear to members, the state associations have done an especially valuable work.

**Concerning a Common Scold.**

A general view of the papers published by certain Bell companies for the benefit of their employees offers food for thought. In most of them it is possible to trace a distinctly helpful purpose, which is bound to make them a factor in the progress of employees, and so, eventually, tend to smooth out operating irregularities and increase personal efficiency. Those of the higher grade not only give much space to discussions of relations between employees and the public, but have articles on methods of doing work, efficiency ratings for employees and exchanges showing the relative standing in respect to service, collections, new business gained, and like matters.

It is needless to name the one conspicuous "horrible example" in this group of company publications. It is unfortunate, however, that there should be in the telephone field such an exponent of the principle of bitter, destructive warfare, because it does, to the reader whose knowledge is local and superficial, give a most unpleasant idea of the petty and venomous habit of mind in which its writers approach large problems. Its various issues are full of frantic screams against competitors, which crowd out matter which might tend to improve the company's internal organism. Probably the forthcoming issue will break the record in its howls of pain—for the Bell interests have suffered three notable defeats in the anti-monopolistic decision of the Illinois Supreme Court, the successful termination of the Home company's struggle for public support at Crawfordsville, Ind., and the passing of the Independent franchise at Indianapolis.

Medical men have learned that malignant germs during their life give off waste products into the blood which, in large accumulations, are poison to the germs. The disease must run until these poisons grow strong enough to kill the germs. The financial and telephone public know the disease from which the company putting forth this amusing sheet is suffering, and the rapid discharge of poison indicates that its suffering is approaching a crisis. The scorpion goes through the world ready to poison every living creature with which it comes in contact, only to perish in the end by its own sting, turned upon itself in the bitterness of its defeated spirit.

**Indications of Progress in Ohio**

The annual report of the United States Telephone Company, operating Independent long distance lines in the state of Ohio, is particularly significant because it reflects to a certain extent the progress and prosperity of the local companies, in addition to those of its own business. It is therefore very encouraging to find that in the past dull year there has been an increase in gross earnings. It is especially worthy of attention that this company has followed the sound policy of increasing its deduction for depreciation, thus strengthening its position, and in this regard it furnishes a good example to smaller organizations.

Although the company now has an exceedingly comprehensive system there is ample opportunity for extension in the way of reading certain new points, and providing additional facilities on existing lines, and Ohio Independents will be very much encouraged by the announcement of plans for new construction aggregating an amount about twice as large as that spent during the past year.

# Service Wires

By A. F. Warner

Marvelous, to anyone who understands the subject, are the different kinds of service wires and methods of attaching them used by telephone companies in various parts of the country. The ingenuity, the originality, and the artistic ability made evident in the fixtures used and their mounting make a very interesting study. In some cases the student will wonder why subscribers do not object to the novel attachments to their buildings. It is probably because they have been persuaded that the attachments are lesser evils to be put up with cheerfully in order to obtain the great benefits of telephone service. There stands a record of one subscriber who had the temerity to "kick" because a couple of linemen wanted to put on the front of his house a beautiful iron bracket made of strap iron two feet long, with two prongs, each a foot long, stuck out at a right angle to carry pony glass insulators set in plaster paris. It is needless to say that it was made in a blacksmith shop, as no reputable dealer would be guilty of such an indiscretion as to put this kind of a device on the market. The peculiarities seem to run with the people the farther one goes from the large cities where this work is done according to specifications.

Judging from all appearances, the real object of running service wires in some companies' plants seems to be to get a connection from the pole lead to a subscriber's instrument with the least effort, least material and the quickest time, without regard to neatness, durability, first cost or expense of fixture repairs. In some counties there are about as many methods of reaching a subscriber's house and instrument as there are different telephone companies. Often one company will have several, all of which have some fault, either in cost, lack of neatness, or durability.

Although a telephone line is not expected to carry high

Side Attachment Showing Advantage of Using Porcelain Knobs for the Sake of Appearance.

tension current, there is always a liability of its coming in contact with a dangerous foreign wire in open construction, in spite of all the care a telephone company may take to keep clear. The telephone manager can neither dictate nor keep track of a new electric light construction all the time. There is also the chance that old light wires will become defective. Service wires must be run with an eye to future

A Neat Piece of Work with Wire Run on One Line of Knobs in Shadow of Drain Pipe.

happenings on the electric light system, to keep clear of trouble.

Among some linemen there seems to be a reckless disposition to make joints. The writer has observed no less than eight splices in a pair of wires running fifty feet from a pole to an arrester. The rest of the construction was the finest to be had. Besides the joint hazard, a prolific source of trouble, there is the crossing hazard. Bare wires left slack will cross. If pulled tight on the house so they will sing, the manager will lose his subscriber, or get lost himself in a cloud of abuse. What looks worse than to see a nice-looking residence with two bare, slack wires, coiled like a long-drawn-out bed spring, fastened to a pole four feet apart, to keep them from crossing, and running to the front or side of the house, where they are attached to two big red wooden brackets or blacksmith-made iron ones? That is sight enough to eliminate bare wires from the mind of a manager who cares for the satisfaction of his patrons.

Next in order on the upward scale come covered wires. Rubber covered wires, twisted in pairs, if one wants to stand the expense, look well, and it does not take much labor to install them. If they are run through trees it is surprising how quickly they will deteriorate by chafing. Even if run clear when put up, a too neighborly tree may grow up, and the wire sag down, until they meet. It has also been observed that, when attached under the eaves of a house on malleable iron brackets, and pulled tight from top to bottom, such a wire will grow slack after a time and the wind will whirl it around like a jump rope. The wire will not stand this condition long before the metal crystallizes, breaks, and there is a case of trouble and another splice. Attachment at frequent intervals, therefore, is necessary.

Single, weatherproof covered wires, either of copper or

iron, with two braids and a winding, have given the writer very good satisfaction. The covering acts as a three-fold protection. Mechanically speaking, it preserves the wire against chafing and the weather electrical protection against high tension currents is afforded to a certain extent. It has been known to resist 2300 volts and more until the in-

Another Corner Attachment with Single Line of Knobs.

sulation was broken down by the action of wind and rain. Protection against loop crosses is, of course, a valuable feature secured by the use of this wire. In wet weather there are numerous places where the use of bare wires would mean immediate trouble, espècially on a common battery system. In any of these cases where contacts with trees, etc., are made, if the weatherproof wire is used, a company is saved a condition of actual trouble for some time, and gives the inspector a chance to see these faults and have them repaired before actual damage is done.

Copper is almost necessary for service wires in warm, moist climates like the Southern coast, where exposed iron deteriorates very rapidly. A covered wire, even if iron, will, of course, not deteriorate as fast as one that is bare. The metal is the last to go, and the covering will protect it for a long time. If iron wire is used it should be the very best galvanized wire obtainable. The labor cost of installing single covered wires is a little more than for installing twisted pair rubber covered, but the cost of material and labor is in favor of the single covered wires.

The varieties of house and pole attachments are numerous, and many of them are conspicuous and clumsy. Nearly all iron attachments will rust, in spite of paint and enamel, and leave a streak of rust on a white house. Porcelain knobs, size No. 4, have not been rivaled for cheapness and ease of installing. They are not big and clumsy. They should be put on with flat head screws, not shorter than 3½ inches, and if the wood is hard, they may be driven part of the way in. If the pole happens to be out of line they will hold against a considerable strain. A pair of red-painted brackets on a white or other colored house is something that should never be seen. If brackets must be used, spend a little money to paint them the right color.

As no two houses are liable to be alike and in the same position from the pole, no set rule can be followed in making attachments. Some are brick, some of wood, and now we find an increasing number built of concrete. The method employed by the writer on a wooden house is to place two solid knobs about a foot apart, well up under the eaves, and in the rear of the building, if possible. Then two-piece knobs of a smaller size are used for running down the side, being preferably placed near the corner board, four feet apart. The knobs should have heavy caps and be toothed as well as slotted. Some double knobs, as used for electric light work, are provided with four slots, two large and two small. The slots to use are those which will bind the wire tightest. The first split knob should be placed a little below and beyond the lowest solid knob. The dead end of the wires on the solid knob should be long enough to reach inside of the building, curved over and fastened solid in the split knob. It is usual to take the bight of the wire and twist it around itself before attaching. Then place the loop in the groove of the knob and twist it close. That saves drawing the long end around the wire a number of times. Cutting is to be avoided. This part of the work should be done first and the wire pulled from the pole end.

When the wires have been attached at the top, they are separated, pulled tight, and fastened with the cap of the bottom knob on the sill. The pulling is done with two pairs of connectors, with their ends caught under the edge of the sill, to give a good leverage. Before slacking off the strain, the other knobs are set up tight. This equalizes the strain and leaves the wires straight, rigid and parallel, separated by a distance of about 1½ inches. Using a little care and judgment will insure a neat job. Often the wires follow along a leader pipe, which will conceal them from a person looking from the front of the house.

After the lower attachment is made, the wires are turned at a right angle and continued on knobs in a horizontal line to the center of the nearest cellar window. Here two 11/16-in. holes are bored in the frame and bushed with porcelain tubes. Putting the wire through these with a drip loop on the outside completes a job which will meet the approval of the National Board of Fire Underwriters. The

Attachment Using Pairs of Knobs on Side of House.

inside ends should be left long enough to enable the inside wireman to put the arrester directly on the line, in a light, convenient place. Some difficulty may be experienced in boring the long holes in the window casing, but an Irwin bit will do the trick with the least labor.

(*Concluded on page* 281.)

# The Development Study*

By S. D. Levings

Granting that we have the correct basis of calculating the future development, by assuming an increase in the future equal to that in the past, the first step in estimating future growth would be to calculate the population five years ahead, based upon the growth for the five years in the past. As was shown, this average yearly growth in the case producing the curve of Fig. 2, was 4,800 per year, and the result of this growth for the five years would be an increase of 24,000. To return to the constructing of the curve, the next step is to select, on the vertical corresponding to a year, five years after the time of making the study, a point representing the equivalent in amount of the present population plus 24,000, and to connect this point with the last one of the curve made upon figures for the past. In the curve for Houston, Texas, this five-year period is shown by an $x$, and represents an estimated population of 103,000, which is 79,000, the present population, plus 24,000 the five year increase. When this point is selected and connected to the past portion of the curve, it is to be extended in a straight line until it intersects the 20-year vertical, which will intersect the horizontal corresponding to the number of inhabitants expected at that time, and is shown to be 175,000 on the Houston curve. The extension of the line from the last point of the portion of the curve representing the past, to the 20-year line, in a straight line, is only to be done where a normal and steady future growth is expected. Where abnormal conditions exist, to exert their influence upon the future, the curve should be made to take a direction that will show the future growth tempered by the influencing conditions.

Aside from the method of calculating the future growth just described, another avenue is open, which, while not showing actual figures, will materially aid in the future estimate. This method is the interviewing of the best informed older inhabitants, and the asking of such questions as will bring out their ideas as to what may be expected of the town in the future In using the information gained in this manner, it must be remembered that, to be of service, it must be discounted to a large extent. It is only natural that a resident of a town for a long period of time, and who has perhaps made his fortune in the town, should be optimistic, and be in that class known as "boosters." In most cases, then, information from this source must be consideed with a proper allowance for optimism, for unless this is done, the result of a comparison of this information with the calculated curve will prove very disconcerting to an inexperienced engineer.

As has been previously stated, rough estimates are often desired on the cost of the initial plant to be built, and it is upon the development figure obtained from the population curve, deduced by applying the development ratio, that such preliminary estimates are based. This estimate is not intended to give more than a general idea as to the cost of the initial plant, and a very quick method is used to arrive at the result. The supposition is made that the cost per telephone for equipping the proposed town for service will be somewhere in the neighborhood of the cost per telephone in a town of similar characteristics and size. It is usually an easy matter to locate a similar town and obtain this gross cost per telephone. When the cost per telephone is used, the figure should contain a prorated amount for each portion of the plant, and this is usually obtained by dividing the total cost of the plant by the number of telephones it is designed to serve. In arriving at this figure care must be taken to see that it is not the result of dividing the total cost of the plant by the working telephones, as this would give a much higher and incorrect figure. Thus a plant designed for 5,000 telephones should be figured for the cost per telephone, not on 4,000 telephones, possibly the number working, but on the total number. An example of obtaining this rough estimate follows:

Assuming the town of a present population of 60,000 used in a former example, and that it is in class A, with an initial development of 10 per cent, the initial number of telephones to be installed would be 6,000. Selecting a town similar in size and physical conditions, it will be found that, for manual service, the cost per telephone installed and ready for service, will be, say $70 per telephone. Multiplying this cost per telephone by 6,000, the result, $420,000 will be the roughly estimated cost of the initial plant to be built. Automatic service installations will run a trifle higher, but whatever the service, the cost per telephone can be obtained as shown, and applied to the initial development figures to obtain the initial cost of the plant. This method, it must be emphasized, is very rough and inaccurate, and to show the inaccuracy a reference to the five year development figures is necessary. As has been noted, the initial cable plant, in size and capacity, is designed on the five year development figures, so that in calculating the initial cost per telephone, this cost in reality includes a pro-rated amount for a cable plant to serve 8,800 telephones in the case of the town just taken as an example, and the estimated total cost per telephone of the initial plant to be built is higher than the actual cost per telephone. This point is brought out to thoroughly impress the fact that preliminary estimates obtained by following the preceding rules, should always be considered in their true light and proper allowances made.

The methods of classifying towns and arriving at the preliminary development figures, before a development study has been made, have now been described, and the point has been reached where the purposes of the development study and the methods of making it need to be defined. The results obtained by applying the preceding rules will serve as a valuable check on the results of the development study, and it is recommended that the preliminary classification and initial development be made in every case, to serve the purposes of a check.

### PURPOSES OF THE DEVELOPMENT STUDY.

The development study may be defined as the data which will show, for a given area, the number of telephones to be expected initially, and at any time during a period of 20 years from the time of making the study. Like the population curve, it is made for a life of twenty years on the basis of the life of the plant, and the inability to forecast further than 20 years into the future. It has for its main purposes the following:

1. To show the number of telephones that can be expected for the initial installation, not based on estimates for population and development ratio, but from actual data obtained from a careful inspection of all portions of the town or area.

2. To indicate the extent and amount of the present plant to be constructed.

3. To indicate the future number of telephones to be expected at various periods.

4. To indicate the future extensions to be built to the plant at various periods.

5. To create a basis upon which to calculate the cost of present and future plant.

*Continued from the issue of February 27, 1909.

6. To determine the number of central offices to be built initially and ultimately.

7. To determine the location of present and future office or offices, in such a way that present offices will become logical parts of the ultimate whole.

8. To furnish a basis for setting rates, classifying service to be furnished, and generally determining the policy of the company.

The purposes of the study now being defined, the methods of making it, together with the assumptions used will be described.

ASSUMPTIONS AND METHODS TO BE FOLLOWED.

As an introduction to the methods to be followed, and the way in which they are carried out, a word should be said concerning the general subject. System in records, and tabulation of assumptions and data, is one of the most important features in making the development study. The making of the study is not at all a difficult problem, but is very complex in its details. It may be difficult to reconcile simplicity and complexity, but as the work progresses the relation of the two will be made clear. The prosecution of any work involving complexity of data, whether simple or difficult, will result in chaos if system is not introduced in keeping such data and records. In making the study, the data involved usually pass through three departments, the engineering, the drafting and the data gathering departments. Owing to this it will be readily seen that the data must be in such shape as to be readily interpreted by all, and a systematic method of keeping records must be adhered to, if accurate results are desired.

The method of collecting figures used in making the study is called taking the "house count," and includes a detailed inspection of every structure in the area or town, from which telephone service may be expected. The method of thus getting the present telephone development insures an accurate check on all telephone requirements, together with the population, and furnishes a detailed record of the physical conditions under which the plant must be constructed. Before describing the manner in which the "house count" method is used, the assumptions on which it is to be found must be defined.

These assumptions are as follows:

1. Rates of service.
2. Classes of service.
3. Service requirements of inhabitants.
4. Classification of dwellings and business places.
5. Allowances for service.

The rates of service and classification can be most easily defined by tabulating them, as shown in the following table. It must be understood, however, that these are variable quantities in actual practice, and are assumed in this case in order to show how to work out the problem. They represent a fair average in both cases for the majority of towns, outside of the largest cities.

| Residence Service. | Rate. |
|---|---|
| Individual line | $24.00 per annum |
| Two-party line | 18.00 " " |
| Four-party line | 12.00 " " |

| Business Service. | Rate. |
|---|---|
| Individual line | $36.00 per annum |
| Two-party line | 24.00 " " |
| P. B. X. trunks | 36.00 " " |
| Pay station (minimum revenue) | 36.00 " " |

No four-party service.

The third assumption, that of service requirements, makes rather a difficult problem, if worked out for each case, and so to avoid the difficulty, certain rules have been established, founded upon the results of a detailed study of the situation, which may be followed with safety in each case. The essential features, and the manner in which they have been evolved, which have resulted in this rule, are these:

It is taken as a fact, that a certain proportion of all wage earners' income, who are heads of families, in such walks of life as to ordinarily require telephone service, either as a luxury or necessity, can be expected to purchase such telephone service as is required. This percentage is a fixed amount, and to overcome the difficulty that would ensue from a uniform rate prohibiting some wage earners, whose income is not equal to that of others, from having the service, the rates and classes of service have been made as shown in the previous table. Therefore, the class of service a man will purchase is largely dependent on income, but the percentage of such income, as before stated, remains a constant for all. We are thus able to classify the wage earners who are heads of a family, into four divisions for residence service. First, those who require individual line service; second, those who will require two-party line service; third, those who will require four-party line service; fourth, those that will not require service on account of an insufficient income. Some of these will use pay stations. Having defined the divisions into which the inhabitant will be classed, in terms of telephone service, the next step is to determine the constant, or percentage of income, which will be expended for service, and which when applied to each individual estimate of income will determine the service required.

(*To be Continued.*)

# Poles Purchased in 1907*

Previous to 1905 statistics upon the production of lumber and timber products were collected by the Bureau of the Census in connection with the decennial and quinquennial censuses of manufactures. In 1905, to satisfy the urgent demand for more frequent reports upon these important products, the Forest Service collected statistics of the production in that year. In 1906, in order to avoid duplication of work and to insure uniformity of results, the Bureau of the Census, in co-operation with the Forest Service, began the collection of annual statistics of forest products.

The collection and compilation of the statistics of production in 1906 and 1907 have been conducted under the direct supervision of a committee of four, consisting of W. M. Steuart, chief statistician for manufactures, and J. E. Whelchel, expert chief of division, representing the Bureau of the Census; and R. S. Kellogg, assistant forester, and A. H. Pierson, forest assistant, representing the Forest Service.

The data in this bulletin are based upon reports from consumers of poles. The returns from steam railroad companies were obtained in the usual manner, by correspondence, while the returns from practically all the other purchasers were obtained by special agents of the Bureau of the Census, in connection with the census of electrical industries. The companies were requested to report the number of poles purchased, because this number can be much more readily and accurately obtained than the number produced or the number actually set in position. In the long run, of course, purchases and consumption are equal. The figures

*Abstract of a circular issued by the U. S. Forest Service.

for 1907 include the purchases of practically every company which bought poles during that year. Table 1 shows, for 1906 and 1907, the purchases of the different kinds of poles by the three classes of consumers.

The total purchases of poles in 1907 were less than in 1906 by 66,668. There was, however, an increase of $758,471 in the total cost of all kinds of poles. The average cost per pole showed an increase of 27 cents. Cedar poles formed 63.3 per cent of the total number for 1907. The next in rank were the chestnut, which formed 18 per cent of the total. The highest average cost of all lengths of poles used for all purposes is shown for cypress, $5.17 per pole. Most of these poles were bought by the electric railroad and electric light and power companies. Tamarack, which is shown separately this year for the first time, had the lowest reported cost, 74 cents per pole. Most of these tamarack poles were purchased by the telephone and telegraph companies.

In 1907 the telephone and telegraph companies purchased 2,311,651 poles, or 65.9 per cent of the total. This was 84,071 poles less than in 1906. The electric railroad and electric light and power companies bought 901,559 poles, or 25.7 per cent of the total. The purchases of these companies decreased by 23,117 poles. On the other hand, the purchases of the steam railroad companies in 1907 increased by 40,520 over those in 1906. In 1907 the highest average cost is shown for the poles purchased by the electric railroad and electric light and power companies, $6.02. Although the number of poles purchased by these companies was far below the number purchased by the telephone and telegraph companies, the high average cost caused the total cost of the purchases of the former to constitute over half the total cost of all poles purchased.

Table 2 shows the poles purchased in 1907 by species and by lengths. Nearly 30 per cent were between 25 and 30 ft. long, while 2,670,810, or 76.1 per cent were under 35 ft. The timber of greatest average length was the cypress. Of these poles, over 60 per cent were between 40 and 50 ft. long. The shortest were the oak, nearly 60 per cent of which were under 20 ft. long. These short oak poles had the very low average cost of 33 cents, mostly due to their use by the lesser companies in localities where small oak is the cheap timber.

While a great number of the poles consumed are used for the construction of new lines, fully two-thirds are used for renewals. Decay is the great cause of destruction of poles. It is

| SPECIES. | 1907 | | | 1906 | | |
|---|---|---|---|---|---|---|
| | Number. | Cost at point of purchase. | Average cost per pole. | Number. | Cost at point of purchase. | Average cost per pole. |
| Total | 3,507,998 | $10,229,642 | $2.92 | 3,574,666 | $9,471,171 | $2.65 |
| Cedar | 2,221,842 | 6,559,169 | 2.95 | 2,174,279 | 5,579,891 | 2.57 |
| Chestnut | 630,282 | 1,619,785 | 2.57 | 988,084 | 2,625,568 | 2.66 |
| Cypress | 212,733 | 1,099,296 | 5.17 | 111,657 | 256,950 | 2.30 |
| Pine | 155,960 | 459,545 | 2.95 | 177,809 | 686,803 | 3.86 |
| Oak | 76,450 | 60,285 | 0.79 | 9,924 | 13,951 | 1.41 |
| Juniper | 38,925 | 109,226 | 2.81 | 57,064 | 163,437 | 2.86 |
| Redwood | 31,469 | 109,478 | 3.48 | 24,760 | 87,189 | 3.56 |
| Fir | 15,919 | 40,720 | 2.56 | 9,601 | 21,637 | 2.25 |
| Tamarack[1] | 13,884 | 10,247 | 0.74 | | | |
| All other | 110,534 | 161,891 | 1.46 | 21,488 | 35,745 | 1.68 |
| **TELEPHONE AND TELEGRAPH COMPANIES.** | | | | | | |
| Total | 2,311,651 | $3,977,019 | $1.72 | 2,395,722 | $5,234,949 | $2.19 |
| Cedar | 1,629,679 | 2,956,290 | 1.81 | 1,532,906 | 3,079,852 | 2.01 |
| Chestnut | 404,128 | 766,072 | 1.90 | 661,898 | 1,510,484 | 2.28 |
| Cypress | 22,981 | 24,647 | 1.07 | 21,395 | 36,559 | 1.71 |
| Pine | 48,063 | 47,497 | 0.99 | 121,509 | 478,427 | 3.93 |
| Oak | 66,422 | 23,100 | 0.35 | 2,980 | 1,500 | 0.50 |
| Juniper | 18,462 | 30,457 | 1.65 | 38,331 | 91,854 | 2.40 |
| Redwood | 8,053 | 15,313 | 1.90 | 7,140 | 24,300 | 3.42 |
| Fir | 6,091 | 3,964 | 0.59 | 9 | 94 | 10.44 |
| Tamarack[1] | 12,827 | 6,615 | 0.52 | | | |
| All other | 94,346 | 105,064 | 1.09 | 9,454 | 11,789 | 1.25 |
| **STEAM RAILROAD COMPANIES.** | | | | | | |
| Total | 294,788 | $828,776 | $2.81 | 254,268 | $585,827 | $2.30 |
| Cedar | 132,985 | 325,899 | 2.45 | 144,359 | 371,246 | 2.57 |
| Chestnut | 39,077 | 91,087 | 2.33 | 63,151 | 139,579 | 2.21 |
| Cypress | 6,324 | 7,733 | 1.24 | 11,976 | 20,271 | 1.69 |
| Pine | 80,928 | 277,300 | 3.43 | 16,826 | 22,866 | 1.36 |
| Oak | 7,681 | 32,470 | 4.23 | 2,736 | 2,549 | 0.92 |
| Juniper | 1,265 | 1,276 | 0.93 | 465 | 638 | 1.37 |
| Redwood | 10,331 | 36,313 | 3.35 | 9,871 | 21,920 | 2.22 |
| Fir | 5,920 | 27,472 | 4.72 | 1,284 | 2,533 | 1.07 |
| Tamarack[1] | | | | | | |
| All other | 3,850 | 9,226 | 2.40 | 3,600 | 4,225 | 1.17 |
| **ELECTRIC RAILROAD AND ELECTRIC LIGHT AND POWER COMPANIES.** | | | | | | |
| Total | 901,559 | $5,423,847 | $6.02 | 924,676 | $3,650,395 | $3.95 |
| Cedar | 459,178 | 3,276,980 | 7.14 | 497,014 | 2,128,793 | 4.28 |
| Chestnut | 187,077 | 762,626 | 4.08 | 263,035 | 975,505 | 3.71 |
| Cypress | 183,501 | 1,066,916 | 5.81 | 78,286 | 200,120 | 2.56 |
| Pine | 26,969 | 134,748 | 5.00 | 39,374 | 185,510 | 4.71 |
| Oak | 2,347 | 4,715 | 2.01 | 4,208 | 9,902 | 2.35 |
| Juniper | 19,098 | 77,493 | 4.06 | 18,268 | 70,945 | 3.88 |
| Redwood | 6,586 | 37,852 | 5.75 | 7,749 | 40,879 | 5.28 |
| Fir | 3,408 | 9,284 | 2.72 | 8,308 | 19,010 | 2.29 |
| Tamarack[1] | 1,057 | 3,632 | 3.44 | | | |
| All other | 12,338 | 49,601 | 4.02 | 5,434 | 19,731 | 2.34 |

[1] Not separately reported in 1906.

**Table 1. Comparative Summary of Poles Purchased in the United States During 1907 and 1908.**

| SPECIES. | TOTAL. | | | UNDER 20 FEET. | | |
|---|---|---|---|---|---|---|
| | Number. | Cost at point of purchase. | Average cost per pole. | Number. | Cost at point of purchase. | Average cost per pole. |
| Total | 3,507,998 | $10,229,642 | $2.92 | 328,789 | $231,396 | $0.70 |
| Cedar | 2,221,842 | 6,559,169 | 2.95 | 196,512 | 132,456 | 0.67 |
| Chestnut | 630,282 | 1,619,785 | 2.57 | 5,639 | 5,009 | 0.89 |
| Cypress | 212,733 | 1,099,296 | 5.17 | 3,505 | 2,983 | 0.85 |
| Pine | 155,960 | 459,545 | 2.95 | 25,373 | 23,076 | 0.91 |
| Oak | 76,450 | 60,285 | 0.79 | 44,851 | 14,652 | 0.33 |
| Juniper | 38,925 | 109,226 | 2.81 | 1,355 | 826 | 0.61 |
| Redwood | 31,469 | 109,478 | 3.48 | 8,065 | 29,863 | 3.70 |
| Fir | 15,919 | 40,720 | 2.56 | 817 | 591 | 0.72 |
| Tamarack | 13,884 | 10,247 | 0.74 | 760 | 883 | 1.16 |
| All other | 110,534 | 161,891 | 1.46 | 41,882 | 21,057 | 0.50 |

| SPECIES. | 20 FEET AND OVER BUT UNDER 25 FEET. | | | 25 FEET AND OVER BUT UNDER 30 FEET. | | |
|---|---|---|---|---|---|---|
| | Number. | Cost at point of purchase. | Average cost per pole. | Number. | Cost at point of purchase. | Average cost per pole. |
| Total | 840,199 | $806,682 | $0.96 | 1,044,804 | $1,757,721 | $1.68 |
| Cedar | 649,383 | 599,534 | 0.92 | 676,501 | 1,150,880 | 1.70 |
| Chestnut | 65,648 | 62,379 | 0.95 | 253,537 | 373,632 | 1.47 |
| Cypress | 12,479 | 8,170 | 0.65 | 16,376 | 22,072 | 1.35 |
| Pine | 36,702 | 66,270 | 1.81 | 44,533 | 110,731 | 2.49 |
| Oak | 21,573 | 9,522 | 0.44 | 3,392 | 3,837 | 1.13 |
| Juniper | 6,735 | 6,596 | 0.98 | 8,492 | 13,726 | 1.62 |
| Redwood | 7,753 | 22,452 | 2.88 | 10,622 | 33,147 | 3.12 |
| Fir | 1,895 | 4,370 | 2.31 | 6,455 | 8,563 | 1.33 |
| Tamarack | 8,968 | 3,748 | 0.42 | 3,119 | 1,862 | 0.60 |
| All other | 29,023 | 23,632 | 0.81 | 21,777 | 39,252 | 1.80 |

| SPECIES. | 30 FEET AND OVER BUT UNDER 35 FEET. | | | 35 FEET AND OVER BUT UNDER 40 FEET. | | |
|---|---|---|---|---|---|---|
| | Number. | Cost at point of purchase. | Average cost per pole. | Number. | Cost at point of purchase. | Average cost per pole. |
| Total | 457,048 | $1,536,505 | $3.36 | 335,796 | $1,635,459 | $4.87 |
| Cedar | 247,306 | 933,644 | 3.78 | 181,701 | 1,036,421 | 5.70 |
| Chestnut | 142,116 | 381,404 | 2.68 | 93,940 | 340,669 | 3.63 |
| Cypress | 22,097 | 58,968 | 2.67 | 23,525 | 85,573 | 3.64 |
| Pine | 19,933 | 78,054 | 3.94 | 15,991 | 84,695 | 5.30 |
| Oak | 3,179 | 11,396 | 3.58 | 2,685 | 15,355 | 5.72 |
| Juniper | 8,909 | 25,648 | 2.88 | 7,797 | 30,525 | 3.91 |
| Redwood | 3,744 | 15,786 | 4.22 | 469 | 2,297 | 4.90 |
| Fir | 2,440 | 8,641 | 3.54 | 2,345 | 8,991 | 3.83 |
| Tamarack | 445 | 1,467 | 3.27 | 459 | 1,715 | 3.74 |
| All other | 7,009 | 21,507 | 3.07 | 6,914 | 29 208 | 4.22 |

| SPECIES. | 40 FEET AND OVER BUT UNDER 45 FEET. | | | 45 FEET AND OVER BUT UNDER 50 FEET. | | |
|---|---|---|---|---|---|---|
| | Number. | Cost at point of purchase. | Average cost per pole. | Number. | Cost at point of purchase. | Average cost per pole. |
| Total | 383,975 | $3,195,475 | $8.32 | 65,300 | $522,017 | $7.99 |
| Cedar | 204,313 | 2,052,816 | 10.05 | 35,551 | 326,503 | 9.18 |
| Chestnut | 38,057 | 198,945 | 5.23 | 18,779 | 127,609 | 6.79 |
| Cypress | 127,957 | 864,723 | 6.76 | 4,324 | 28,132 | 6.51 |
| Pine | 6,558 | 44,551 | 6.79 | 3,641 | 22,963 | 6.32 |
| Oak | 247 | 1,225 | 4.96 | 5 | 30 | 6.00 |
| Juniper | 3,116 | 15,388 | 4.94 | 1,253 | 6,875 | 5.49 |
| Redwood | 497 | 3,295 | 6.63 | 255 | 1,813 | 7.11 |
| Fir | 1,006 | 4,040 | 4.02 | 820 | 4,173 | 5.09 |
| Tamarack | 108 | 437 | 4.05 | | | |
| All other | 2,116 | 10,046 | 4.75 | 672 | 3,898 | 5.80 |

| SPECIES. | 50 FEET AND OVER BUT UNDER 55 FEET. | | | 55 FEET AND OVER BUT UNDER 60 FEET. | | | 60 FEET AND OVER. | | |
|---|---|---|---|---|---|---|---|---|---|
| | Number. | Cost at point of purchase. | Average cost per pole. | Number. | Cost at point of purchase. | Average cost per pole. | Number. | Cost at point of purchase. | Average cost per pole. |
| Total | 30,719 | $284,076 | $9.25 | 11,025 | $108,500 | $9.84 | 10,373 | $151,811 | $14.64 |
| Cedar | 18,442 | 177,921 | 9.65 | 6,107 | 60,849 | 9.96 | 6,026 | 88,145 | 14.63 |
| Chestnut | 8,205 | 71,080 | 8.66 | 2,565 | 26,735 | 10.42 | 1,796 | 32,332 | 18.00 |
| Cypress | 1,670 | 15,999 | 9.58 | 234 | 3,529 | 15.08 | 566 | 9,147 | 16.16 |
| Pine | 791 | 6,969 | 8.81 | 996 | 5,802 | 5.83 | 1,572 | 16,404 | 10.44 |
| Oak | | | | 548 | 4,258 | 7.77 | | | |
| Juniper | 1,045 | 7,025 | 6.72 | 119 | 1,175 | 9.87 | 104 | 1,442 | 13.87 |
| Redwood | 10 | 254 | 25.40 | | | | 14 | 571 | 40.79 |
| Fir | 118 | 1,076 | 9.12 | 15 | 165 | 11.00 | 8 | 93 | 11.63 |
| Tamarack | 25 | 125 | 5.00 | | | | | | |
| All other | 413 | 3,627 | 8.78 | 441 | 5,987 | 13.58 | 287 | 3,677 | 12.81 |

**Table 2. Poles Purchased in 1907; Species, Lengths and Cost.**

estimated that approximately 95 per cent are destroyed by this cause, and only 5 per cent by breakage or mechanical abrasion. The average life of untreated poles of all species is estimated at 13 years. This may be much prolonged by preservative treatment, the best known of which is the creosote process. The most complete figures available on the effect of this treatment are those furnished by the German Postal and Telegraph Department, which, on the basis of 52 years of observation, give creosoted Baltic pine poles a life of 21 years.

No figures are available for the number of poles treated annually in the United States.

In the South a number of plants do an extensive business in creosoting pine poles. In other parts of the country the use of poles impregnated with preservatives has not made so great a progress. If, however, we include among the treated poles those that are given merely a surface application of a preservative, the number treated annually is quite large. The reports from consumers for 1907 show that at least 396,199 poles, or over 11 per cent of the total number purchased, received some preservative treatment. Of this number, 106,781 were purchased already treated, while the balance, or 289,418, were treated with some preservative after purchase. Telephone and telegraph companies bought 47,272 treated poles, and in addition treated 183,376, making a total of 230,648, or 10 per cent of the total number purchased by these companies. Steam railroad companies purchased 37,869 treated poles, and applied treatment to 43,460 more, making a total of 81,329, or 27.6 per cent of the total number purchased. The electric railroad and electric light and power companies purchased 21,640 treated poles and treated 62,582 after purchase, making a total of 84,222, or 9.3 per cent of the total number purchased.

The use of preservatives superficially applied has grown very rapidly during the last few years. Among the substances used are creosote, tar, tar oil, asphalt, crude petroleum, and various patented preparations. This manner of applying the preservative has the advantage of simplicity and cheapness, and for many conditions has proved valuable, adding considerably to the life of the pole. This process should not, however, be regarded as a substitute for the more efficient impregnation of the wood with the preservative.

Impregnation is usually effected by means of pressure pumps, the timber being placed in strong retorts, hermetically closed. Recently, however, what is known as the "open-tank" or "non-pressure" process, has been developed, whereby atmospheric pressure is employed to drive the preservative into the wood by a simple alternate heating and cooling of the pole in the treating liquid. The poles may be placed upright in the tank, so that only the butt is impregnated, since this is the part most liable to decay and hence most in need of treatment. The advantages of this method lie in the decreased cost of the apparatus required and the very considerable saving of preservatives.

Extensive experiments have fully demonstrated the practicability of the open-tank process for many conditions. In a test recently conducted in southern California, about 1,800 poles were treated by various preservatives, and careful records will be kept of their comparative durability.

A 40-ft. southern pine pole with a 7-in. top contains about 25 cu. ft. Assuming an absorption of 8 lbs. of creosote per cubic foot of timber, or 23½ gallons per pole, with the cost of creosote at 10 cents a gallon, the preservative will cost $2.35 per pole. Allowing 50 cents for labor and seasoning charges, the total cost of treating the entire 40-ft. pole will be $2.85.

In California, the standard 40-ft. western yellow pine pole contains about 25 cu. ft., and creosote costs there about 20 cents per gallon. The actual cost, therefore, of treating the entire length of the pole will be about $5.40. If, however, only the butt of the pole is impregnated, only about six gallons of oil and preservative will be required, and the total cost will be reduced to about $1.52 per pole. The prices quoted do not include profit.

# Telephone Conditions in Iowa*

Almost without exception the Independent Telephone Companies in Iowa have increased their business as well as their popularity, power and permanency during the past year, as the following table, compiled from the most recently printed report of the Executive Council, indicates:

| | Independent Telephones: | Bell Telephones: | Total Telephones: | Independent exceed Bell |
|---|---|---|---|---|
| In cities and towns | 103,543 | 50,856 | 154,399 | 52,687 |
| Rural | 130,451 | 4,001 | 134,452 | 126,450 |
| Total, 1908 report | 233,994 | 54,857 | 288,851 | 179,137 |
| Total, 1907 report | | | | 257,427 |
| Increase during the year (306 per cent) | | | | 31,324 |

From the best figures obtainable, there seems to be now in service an average of one telephone to about seven inhabitants throughout the entire state. Prosperous Independent companies have become so numerous, and have been favored with such a preponderance of the patronage, that we are getting into the habit of talking about the telephone matters very much as though the Independents only were in the field, but in view of the fact that in other states the Bell is still endeavoring to compete in a larger percentage of the places, and is said to still retain in those states a more formidable proportion of the total business, and in view of the further fact that we have been told by men of importance in both the Bell and the Independent organizations that the Bell is making the claim that it is doing its utmost in the Hawkeye State, it is probable that we are expected to depart from our local custom to the extent of reporting our version of the results of what the Bell seems to have published as its "war to the death" in Iowa.

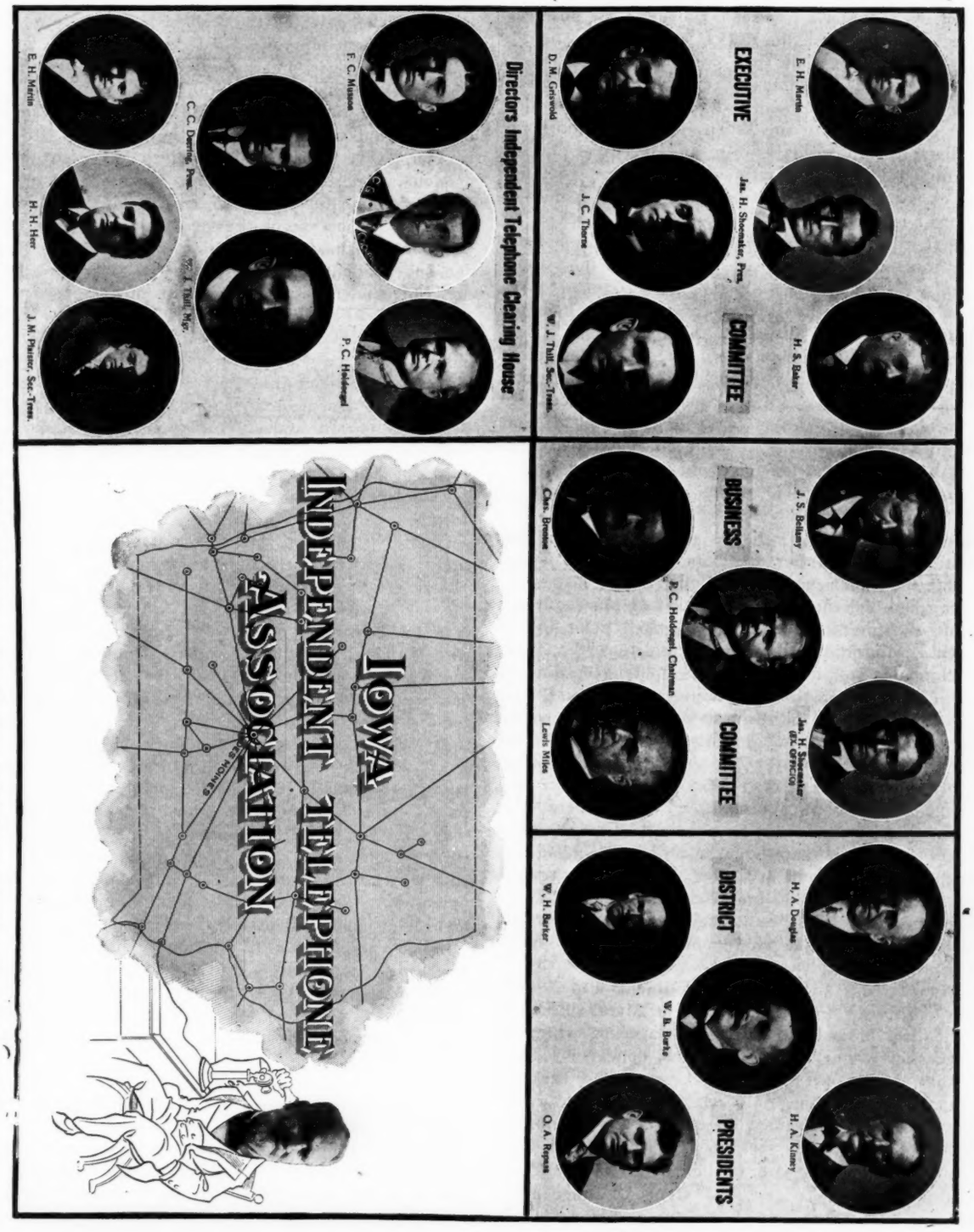
As viewed by us, this so-called war is destined to end very much after the fashion mentioned by the man in the minstrel show, who when answered in the negative as to whether his partner had heard that the war between the Russians and the Japs was ended, said, "Yes, it had to be stopped because the Chicago American ran out of red ink." We feel thoroughly assured, and we take this method of assuring all who are sufficiently interested to read our report, that so far as Iowa is concerned, the Bell Telephone company's war in the newspapers and magazines will only continue as long as the Bell investors will permit their good hard cash to be paid out for the *Ink*, the advertising space, the free service to newspapers, and the other perquisites by means of which they now have such free access to various publications. Like the war between the Russians and the Japanese it will have to be stopped the moment the supply of Bell "Ink" runs out.

As is well known, the Bell has used numerous makeshifts in its efforts to perpetuate that private monopoly which lawfully it exercised prior to the expiration of its patents. This year in Iowa it inaugurated the policy of buying a controlling interest in Independent plants, and as was prophesied in the published reports of Mr. Whitney of Indiana, the principal result of this attempt on the part of the Bell to purchase control of Independent plants has been doubling up of the marketable value of Inde-

*Report of the Iowa Independent Telephone Association presented by James H. Shoemaker, president, at the Convention of the International Independent Telephone Association.

pendent properties in general throughout the state. The Bell seems to have learned very quickly that it would be unable to obtain the control of the Independent properties at any price if it disclosed its identity as the real purchaser, and a man declaring himself to be the agent of Independent investors appeared. He did his best to get possession of shares in certain Independent companies on the assurance that he represented the largest and most loyal Independent interests in the country, but even then he was unable to carry his point, not because of the matter of price, but because he was unable to overcome the suspicion on the part of the owners of the shares that he was a Bell representative in disguise. The men who are operating Independent plants in Iowa are, in the main, neither promoters nor stock jobbers. They are hard headed, ordinary individuals. They have had neither the inclination nor the occasion to familiarize themselves with stock manipulations. The present head of their monopolistic competitor and his immediate predecessor, in their most recent annual reports of the Bell Company had said:

"The so-called Independent Telephone Companies, which are in competition with the Bell Company throughout the United States have, as far as we can learn, except in a few localities, MADE NO RELATIVE GAIN. We, (The Bell) have now developed our plant and business and organization in most of these (competitive) localities to such an extent as to HAVE THE SITUATION IN HAND. The investors from whom the Independent Telephone promoters have received money in the past, are apparently less inclined than formerly to make the advances required to install the 'Independent' Telephone exchanges. . . the result has been (for the Independent companies) unfortunate in nearly every case. The promises and pledges as to rates and profits made as the excuse for their coming (into existence) as a




Prominent Iowa Independent Telephone Men and Map Showing Long Distance Independent Telephone Connections in Iowa.

basis for their franchises and AS AN INCENTIVE TO ATTRACT CAPITAL, ARE NOW ADMITTED TO BE IMPOSSIBLE."

Representatives of the Bell company had declared that the property of the Independents in Iowa was principally "junk heaps," so insignificant as to cause no apprehension, and so valueless as to merit no attention, and as shown by the published reports of Mr. Whitney of Indiana, the declaration had been made in the public press that investors in the shares of Independent companies would *lose every dollar they had invested.*

A sudden reversal from its former policy to the new policy of coquetting in disguise with shareholders of Independent properties very naturally caused at first much anxiety among the managers of the Independent systems. It was much the same in its effect as might be expected if some high-headed person who had previously made sport of a farmer, calling him a hay-seed, ridiculing his business, and depreciating his land, his flocks, his children and his wife by the argument that they were worthless, should suddenly reverse his attitude by exceeding the highest price ever offered for the land and the flocks, threatening to hold the farmer up to the scorn of his neighbors for alleged mistreatment of his family, and boasting that he was determined to win the farmer's wife away from her husband. It naturally took a little time for the sensibilities of the hard-headed managers thus suddenly shocked by the complete reversal of the policy of their monopolistic opponent to settle themselves back to their normal equilibrium.

The first buy-out of the Bell in Iowa was at Dubuque. There the Bell made no denial of the report that it had purchased a majority of the shares of the Independent company. The recent filing in the United States Circuit Court at Dubuque, of a Bill in Equity, which seeks to have set aside the sale of a majority of the stock of that company to the Bell interests, has been mentioned generally in the news items of the daily papers and in the columns of the telephone journals. Further mention of it here is unnecessary.

The next buy-out of the Bell was at Marshalltown. But although this was soon after the Dubuque purchase it was evident that the experience at Dubuque proved less satisfactory than had been anticipated, because at Marshalltown the scheme was worked by selling the Bell plant to the Independent corporation and announcing that the Independent company had bought out the Bell. Not a word was said publicly about the very important fact that, preceding the purchase of the Bell plant by the Independent corporation, the Bell had bought a majority of the shares in the Independent company. The vote at the November election of eight to one in favor of a franchise for a new Independent company at Marshalltown to compete with the former Independent company, now known to be a Bell concern, indicates another result of the Bell's buy-out policy, which is second in importance only to the first mentioned result of doubling the marketable value of Independent properties. It is the arousing again of that old public indignation against monopolistic methods. With matters running along smoothly, when three-fourths of the telephones were Independent, sentiment was a little dormant. The vote on the franchise at Marshalltown is one of the best indications that this sentiment will rally to the occasion whenever and wherever appealed to, and the fact that at Missouri Valley on the same day the vote on the application of the Bell company for a franchise was turned down by a decided majority is another indication of the trend of public sentiment in Iowa.

The third and last buy-out of the Bell was at Prairie City. In that locality a new and vigorous Independent company has been incorporated with ample funds and is already at work duplicating the former Independent property that was sold to the Bell. The result is that there will be a new and modern plant more closely allied to the Independents than the original was.

The effort to buy out the Story County properties failed so far as the Bell was concerned, but demonstrated a third result of the Bell's buy-out policy, which is that the Independents are now more independent of the Bell and more interdependent among one another than before. As a direct result of the Bell's attempt at what it has elsewhere advertised as "stealing a march," the various Independent companies throughout Story County entered into an agreement whereby an appraisement was made of their physical properties. A union of ownership throughout the entire county was effected, in the name of a new corporation, which has for its president and general manager the man who defeated the Bell in its attempt to steal this march in that county.

The more close and more powerful relationship which has been effected through the past months between the Independent interests in and around Des Moines was hastened and stimulated by the buy-out policy of the Bell. In fact, every effort of the Bell to buy control of Independent properties in Iowa has resulted exactly as was prophesied in the published reports of Mr. Whitney, of Indiana. It has raised the marketable value of Independent plants; it has aroused public indignation; it has solidified Independent interests, and it has only served to make the Independents more confident and more enthusiastic than ever concerning their own affairs. The owners of shares in Independent companies have not only been convinced that their stock is worth more than they formerly thought it was, but they have also been convinced that in buying out Independent plants to stifle competition the Bell places itself under the responsibility of paying divi dends and interest upon a doubled-up investment for two properties, at least one of which is a white elephant upon its hands, and that under these circumstances the field becomes more inviting than ever before for a new Independent corporation with the most modern methods and equipment to enter the field immediately.

At a recent convention in Iowa, reports were given from the various local companies, as to the condition of property and business, and as to the payment of dividends, with the result that there is now a printed record of a large number of companies in Iowa that have never failed to earn reasonable returns and whose properties and business are in better condition than ever before. In comparing the property of the Independent telephone business of Iowa with the business of the banks of the same state, we assume that it is acknowledged that Iowa's banks are in a general way second to none; nevertheless, it is a fact that, in common with the other states, Iowa has had some bank failures and some of its bankers have committed suicide, whereas its failures of Independent telephone companies has been a negligible quantity in contrast, and the idea of an Independent telephone man being driven by his business perplexities to suicide would be preposterous. We have in our state a motto which reads: "In all that is good, Iowa affords the best." That is why there is in our state a telephone for every seven people, with about three-fourths of the telephones belonging to the Independents.

### Severe Sleet Storm in Crawford County, Iowa.

On the morning of Feb. 9 a very severe sleet storm broke down several miles of line for the Crawford County Telephone Company, of which Mr. J. F. Glenn is manager. Nearly all the rural lines were put out of commission, with an estimated damage of $1,000.

# LETTERS ON PRACTICAL SUBJECTS

### False Rings Due to Poor Central Office Ground.

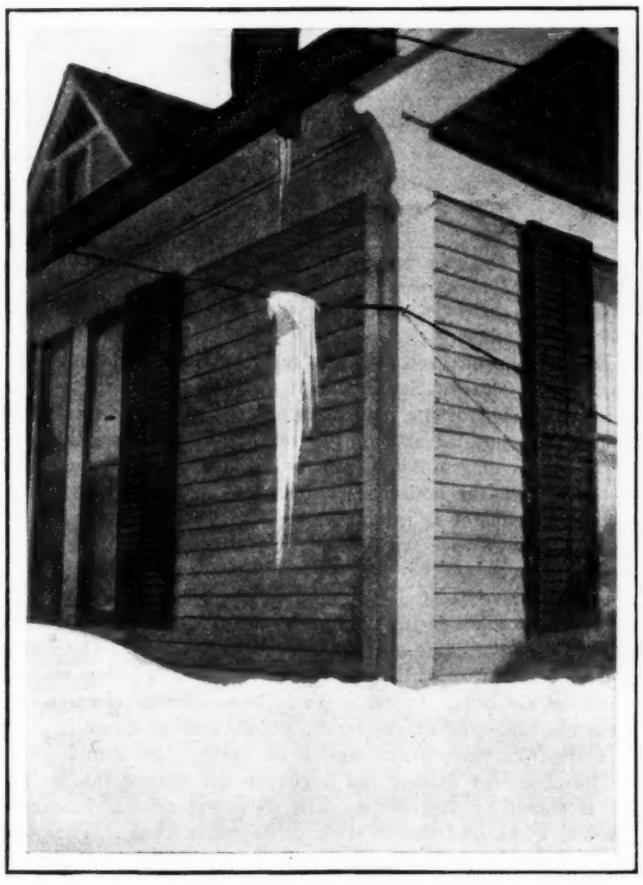
Referring to the question and answer under the heading "False Rings on Ground Return System," page 163, February 6 issue, TELEPHONY, is it not possible that the trouble is caused by the switchboard having a poor ground? If the ground connection has a very high resistance, most of the current from the grounded side of the generator, instead of going direct to ground, will pass through the line drops to the lines, and go to ground through the telephones. It seems at first thought that the drops would fall, but if the drops are low wound, and the ringers high wound, the ringers will operate on less current than the drops; and as each ringer is in series with the line drop when the line is not in use, both ringer and drops get practically the same current.

Lavaca, Neb. W. F. Hankins.

### Icicle Short Circuits Line at Subscriber's Drop.

The photograph I send you herewith shows a line trouble such as few telephone men ever saw. The line was reported crossed a few minutes after a fire alarm had been rushed in, for the house shown in the picture. A lineman went out at once, expecting to find our wire crossed where the firemen had raised their ladders. On his arrival there he found the line crossed at another point, and the line clear where the ladders had been raised.

When tests were made the possible location of the trouble was narrowed down to the "drop" leading to the house, in the photograph. Some one had raised the twisted pair of dropwires over a nail to take up the slack, and the large icicle hanging on the wire had caused the insulation to wear through, leaving both wires bare on the nail, and short circuiting the line. The faulty location of the drop wire is apparent in the picture.



**This Drop Wire Was Short Circuited by a Nail on Account of the Pressure Due to the Weight of the Large Icicle.**

E. M. Howard.
Franklin, N. H. Manager Citizens Telephone Co.

### Hints on Maintenance.

In the maintenance of telephones in general, whether magneto or central energy, in large or in small exchanges, uniform methods may with advantage be employed. The electrical field is so great, and the principles of operation so flexible, that numerous ways of accomplishing the same final results are possible. But in all the branches of the engineering science the fact is coming to be recognized that there is some single way just a little bit better than the rest, and that single way is being gradually brought into uniform and general practice. As a result, it finally becomes what is known as "standard practice" and any deviation from the beaten path is looked upon with suspicion. There is also another grand principle which has made its force apparent to the whole world. It is symmetry. In symmetry there is vast strength, and this principle is more than substantiated by the supremacy of American manufactories over the English and foreign manufactories in general. Taking the American machine lathe, for example. It is being used exclusively in the foreign factories since its symmetry and precision have become generally acknowledged abroad. It has been the past custom in some English factories to make parts adjustable or at least no two parts exactly alike in order to facilitate assembling. With the modern screw machine this is impossible since every piece must be turned out absolutely like the previous one. Hence left handed screw threads and other irregularities of construction have been discontinued in every possible case; the same size of screw has been used throughout as far as possible in every part of the finished product, thus reducing the complexity caused by multiplicity of parts. Also parts of apparatus are now cast in one piece wherever possible, thus giving greater strength to the final machine. In many ways this principle or law of symmetry has been carried out with inevitable success in the mechanical world.

Now, in switchboard practice and maintenance of telephones would it not be well to adopt some standard practice or general law of construction. For instance, locate terminal clips on switchboard racks in such a manner as to bring the tip or "plus" wire clip to the top and left, and the sleeve or negative wire clip to the bottom and right; thus the size or shape would not be affected in any way. But if unity existed on this one point, even, a new man on switchboard work would be able to distinguish between the opposite sides of the circuit with ease, even though the wires were not coded, or, as has happened in several instances, the colors having run together on the application of hot wax so as to be undistinguishable even to experts, thus causing annoyance and delay in testing out the connections on the rack. Yet by following the rule in "shooting trouble" on a switchboard where such a plan is in vogue, no such difficulty is experienced and more work can be done by one man with greater ease and precision under such conditions of symmetry.

In most common battery telephones there is a condenser which holds the circuit open to direct current when the receiver is on the hook. Have you ever found condensers in a partially broken down or leaky condition? This is frequently the case. The insulation resistance of the dielectric separating the two electrodes gradually lowers. Most condensers are assembled with paraffine wax which shrinks with age, absorbs water in the voids caused by the shrinking and carbonizes when high tension currents pass through it, or to more properly state the action, when the high tension currents set up a stress in the dielectric between the opposite plates of tin foil. If the voltage is sufficiently high, a puncture of the insulation results. A small round spot of black or carbon forms the short circuit. The spot is sometimes so small that a magnify-

ing glass has to be used in order to discern it, but the "short" is there just the same, and the spot grows larger as the current continues to pass over it from one plate to the other until the area of its cross section is sufficient to pass considerable current. One little puncture, a carbonized path between the electrodes, allows direct curent at 24 or 40 volts to flow night and day whether the telephone is in use or not. This produces a constant drain on the batteries. In one common battery exchange of 4,000 telephones, operating at 40 volts pressure, the combined leakage due to all forms of low insulation amounted to the constant consumption of from three to four amperes steadily, night and day, or enough current to steadily supply about 40 telephones curent for carrying on conversations.

A great deal of money is lost by the employment of deficient methods of maintenance. For example, one might refer to the case of some booster batteries which were charged, from electric light mains, through lamps which were used at the same time to illuminate the terminal room, in a large exchange. It was sought to economize on power bills by shutting off the booster lamps a larger portion of the time than was formerly the practice. The cells had been in use about one year and were in very good shape electrically and mechanically, but after about six months of starvation they were replaced by a new set costing in the neighborhood of $400. The saving in power bills amounted to something like $36 for the period of six months.

Minneapolis, Minn. A. M. Severson.

### The Care of Gravity Batteries.

The care of gravity batteries in small exchanges is very important. They must always be in good condition, or else satisfactory service will be impossible. If they are in bad shape subscribers will always be "knocking," and saying that they can't hear central half of the time.

In renewing batteries the first thing to see to is that jars shall be clean, and indeed they ought to be kept clean all the time. The best water for the jars would be rain or distilled water. First put in some water—filling the jar about one-quarter full—then put coppers in, having previously bent the corners a little at the bottom of the coppers, so as to keep the copper from being pulled out of the "bluestone." Now pour the "bluestone" or "blue vitriol" in, filling the jar about half way up to the top of the copper, then put your zinc in the jar, and fill with water to about one or two inches above the zinc. Now you have your battery complete. It would be best, if you could do so, to let the jars be short-circuited about twenty-four hours, or if you have any sal-ammoniac you could put a little in each jar and connect them at once to your board. The shelf on which you set your jars should be kept clean.

Observance of the practice mentioned in these notes should give you a good battery, and with proper attention it will give good service.

Chaudrant, La. Clarence W. Clark.

### Columbus Pays Usual 1¼ Percent.

The Columbus Citizens Telephone Company, on Monday, March 1, paid the usual dividend of 1¼ per cent on the common stock of the corporation. The dividend is quarterly, making 5 per cent annually. The dividend was declared at a recent meeting of the board of directors.

### Service Wires.

(*Concluded from page 274.*)

In placing service wires on houses, the place of original attachment and entrance depend somewhat on the location of the telephone. The outside wires should be run so as to use the least wire and labor inside. If the telephone is to be placed on the first floor, the best plan is to run to the cellar window. This puts the arrester in the best place to reach grounds for ringing and protection. One disadvantage in this location is that malicious persons or thieves can easily reach the wires and put the telephone out of service. In many cases the wires can be run into the attic, especially if the telephone is on the second floor.

Knobs are used by the writer when service loops are taken

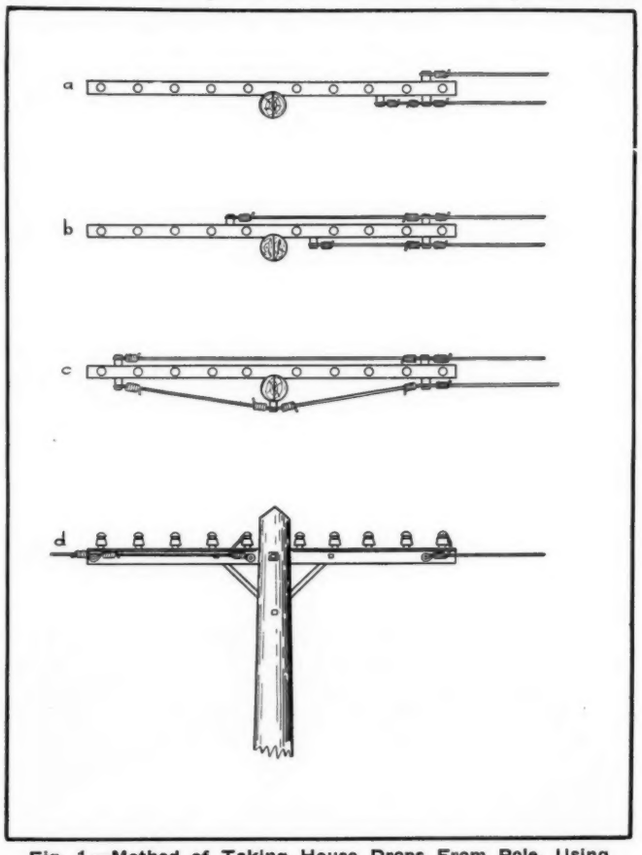



Fig. 1.—Method of Taking House Drops From Pole, Using Porcelain Knobs.

directly off the pole, and these are put on the arm by the following method:

First: One on each side of the end of the arm where the service wires leave. Second. One on each side of the arm on the remote side of the pins on which are run the wires to be tapped, *A*, Fig. 1. Pole pin wires are knobbed on the arm as shown in diagram *b*. Pairs on the end of the arm which is away from the house are knobbed as shown in diagram *c*.

The end sought is insulation as near perfect as can be obtained. The service wires are below the surface of the arm, where they cannot be disturbed, injured by running in new wires, or walked on. If for any cause a glass gets broken, or the wire of another line is poorly tied so that it lies on the arm, it does not cause a cross with another circuit. The knobs and wires, furthermore, do not interfere with passing up and down on the pole. In cases where two different circuits lead from the same end of the arm, a double row of knobs is used. If more than two circuits lead from there, a tee arm is used.

The object of placing the knobs on the remote side of the pin is shown by diagram *d*. The wires are dead-ended under the line wires, and tied in at all of the other knobs. The position of the knob brings the turns of the dead end directly under the lead wire, where the end is turned at right angles, stripped and connected. The sleeve tap is the best, but a joint well covered with tinfoil and tape is sometimes used, although it is not to be recommended. Soldering will either be shirked by the linemen entirely, or be poorly done. In all cases it is well to have service wires so regularly run that any person can readily see, from the ground, what lead wires are taken by them.

# The Telephone in the Courts

Conducted by A. H. McMillan

### Rental and Right of Way Contract.

We are enclosing form of contract with our subscribers and wish to know whether same should be recorded in Ohio to obtain a good right of way, and if not necessary would same be construed as binding by our courts, and if so, would the right of way privileges as worded be considered a perpetual contract or for one year only? We think that clause (2) destroys the perpetuity of the contract.

Have you any suggestions that will make this contract stronger? Is it necessary to have a witness?

The contract referred to above is an ordinary contract for rental of a telephone. The second paragraph of it is as follows:

"After the expiration of said original term the continued use of said telephone shall work a renewal of this contract for quarterly terms of three months each, and thereafter this contract may be terminated upon written notice by either party at the end of any quarter."

The paragraph giving the right of way is as follows:

"That for, and in consideration of, the mutual benefits and for value received, the subscriber hereby grants to the ———— Company, of ————, Ohio, its successors and assigns, the right to build, maintain and operate telephone and telegraph lines, including the necessary poles, underground conduits, wires, guy stubs, and other fixtures, through, under, in and along the public highway, adjoining the real estate owned by said subscriber, also over or across said subscriber's property, and the right to trim such trees as may be necessary to construct and operate said lines."

We do not believe that the form of contract above mentioned needs to be recorded to obtain a good right of way. The recording of a right of way or any instrument affecting real property is to give notice to any possible purchaser of the property that the person receiving the right of way has an interest in the real estate. In case of a telephone line, the existence of the poles and wires upon the property would be notice to any purchaser of the rights of the telephone company, and this makes the recording unnecessary, in cases where the line is actually built. However, where the company does not build its line, but simply wishes to acquire and preserve the right of way for future use, if desired, the instrument should be recorded. The Editor agrees with you that the right of way privilege as worded, would be considered a contract for one year only. In order to make the matter definite and certain, we would suggest the adding of the following sentence to paragraph 6, the latter one quoted above. "The rights granted by this paragraph are not terminable upon notice as hereinbefore provided, nor do they cease upon the lessee ceasing to be a subscriber of the company."

In order to entitle the contract to record in cases where the line is not to be actually erected, it would have to be acknowledged as ordinary deeds. It should, under all circumstances bear the signature of two witnesses.

### Remedy for Dangerous Construction by Electric Light Company.

We have an electric light proposition to take up with your law department. I wrote you in a former letter a few days ago on another matter and stated we had a franchise to operate and maintain an exchange in the town of ————, we have been operating the plant since Aug. 15, 1900. The fall of 1907 our town gave a franchise to an electric light company to build an electric light plant in this town, which they did in the spring of 1908, and it is giving us a great deal of trouble. It has not used high enough poles, and does not go over and clear our leads, and runs its wires through and under our drop wires going to the residences, and is now burning off some of our drops and burning out some of our telephones. We take one side of the alley and the light people the other side, in a great many cases their poles are not as high as ours, and they feed their arc lights through and under our leads. We have given them notice to put in higher poles and raise their lines up and go over us, saying if they did not do so, we would bring suit and enjoin them from giving service. They are carrying 2,200 volts on their lines and the way they have their construction it is dangerous to property and life of our men working on the lines.

Let us know if we have a good cause for action, and if they can be forced to raise their wires and go over us, and what course we will have to pursue to get them to do so. In some cases they have anchored to our poles.

The facts you state seem to constitute a good cause of action, and we believe that you are entitled to force the electric light company to raise its wires and go over you. The course for you to pursue would be to bring suit for mandatory injunction. The distance over you they should go depends upon circumstances and no absolute rule is or can be laid down that will always hold good. In the country a distance of ten inches between the nearest wires stretched upon cross arms attached to poles of two companies was in one case held to be sufficient. In another case arising in the city, a distance of four feet between wires on the different companies poles was required. Northern Telephone Company vs. Iowa Telephone Company, 98 N. W., 113; See also Chicago Telephone Company vs. Northwestern Telephone Company, 65 N. E., 329; McKay vs. S. Bell Telephone Company, 111 Ala., 337; 19 Southern, 695, 31 L. R. A., 589; State vs. Janesville Street Railway Company, 87 Wis., 72; 4 American Electric cases, 289; 41 A. S. R., 23; Central Telphone and Supply Company 11 Pa. Co. Ct. C. 417; 4 American Electric cases, 260; McMillan on Telephone Law, Sec. 152.

### Obstruction of Navigable Waters.

While attempting to return home in a gasoline launch of somewhat crude construction, Katherine Heiberger was injured on the Mississippi River by the boat colliding with a telephone wire belonging to the Missouri and Kansas Telephone Company. The line crossed the river at Boonville at an elevation of about fifty feet, but in some way had sagged in the middle of the span to a few inches below the level of the water at a point where the boat attempted to pass. The occupants were thrown in the water. Suit was brought against the company, and a judgment recovered. The company's foreman of construction testified that about eight o'clock in the morning of the day of the injury, he received notice of the sagging of the wires and had them tightened and left them in that condition in the afternoon. This was all the evidence introduced by the company.

The court held that in the construction and maintenance of its line, the company was bound to take into consideration the right of the public to navigate the river, and was required to build the line at a height above the water sufficient to permit the free passage under it of river boats, and to exercise at least reasonable care to prevent it from becoming an obstruction and menace to navigation. The court held that the plaintiff had proved her case by showing that her injury was caused by the collision of the boat, in which she was riding, with a submerged telephone wire owned by defendant, which constituted an obstruction to the free passage of such small river boats. Then the burden of proof shifted to the telephone company to explain the presence of the wire at that place. The court held that the case was properly submitted to the jury and sustained a judgment giving her $2,500.

### Postmaster Must Have Telephone or Resign.

The increased necessity of a telephone in all business transactions is shown by the petition of Robert Julian, filed in the Superior Court at Seattle, Washington. He alleges that unless the Pacific Telephone & Telegraph Company installs a telephone in his postoffice and store at Pleasant Valley, he will be obliged to resign his position as postmaster, and go out of the grocery business.

The court was asked to grant an alternative writ of mandamus requiring the telephone company to install an instrument in the sub-station or show cause. Judge Morris granted the writ.

The petition states that on February 18, 1908, the telephone company agreed to remove Julian's telephone from his old location in Rainier Valley to Thirty-fourth Avenue and Emerson Street, where the main line is 1,700 feet from Julian's store. Though eight months had elapsed the company is alleged to have failed and refused to carry out its agreement. Julian told the court that customers were unable to order goods of him, and that he was unable to call up the postoffice down-town and acquire information about his duties that he needed. In addition to this, it is stated that a petition is now being circulated to have the postoffice removed to the store of one Gill, who is in competition with Julian, and who has a telephone in his store.

### Joint Liability for Causing Fire.

At Staunton, Va., B. B. Buchanan sued the Staunton Mutual Telephone Company, and the city of Staunton for negligently causing a fire in his store house. The two defendants demurred to the declaration and the court ordered the suit discontinued as to the city. The plaintiff then discontinued the suit entirely and brought action against the city of Buchanan alone. The result of this case was a verdict for the city. Buchanan then brought suit against the telephone company. The company claimed that the previous judgment in favor of the city was a good defense in the latter suit, but the court held that this was not the case as joint wrong doers are liable jointly and severally.

In the last case there were two counts in the declaration, one based on the negligence of the company in permitting its wires to come in contact with the wires of the city's electric lighting system heavily charged with electricity and the other based on the negligence of the company in failing to use and install a "fuse block" in the plaintiff's store. The court held that there was no evidence to lead the jury to believe that the fire was caused otherwise than as alleged. Staunton Mutual Telephone Company vs. Buchanan, 62 S. E., 928.

### Rental for Use of Streets.

The city of Memphis brought suit to collect pole rentals charged the Postal Telegraph and Cable Company for the occupancy and use of its streets. In order to determine whether the rental of $2 per pole, from 1896 to 1901, and $3 per pole since 1902, were respectively unreasonable and excessive or not, the cases were referred to a master to take proof and report. The master took proof and reported, sustaining the rentals. The circuit court of the United States for the Western District of Kentucky differed with the master, holding that the rental of $3 per pole was unreasonable and excessive, and that the rental of $2 per pole was reasonable and excessive, and that the rental of $2 per pole was reasonable and proper. The court approved the ruling of the master, reversing the lower court and holding that it was sustained by the evidence. Memphis vs. Postal Telegraph and Cable Company, 164 Fed., 601.

# Practical Questions and Answers

### Winding for Relay or Magnet.

I want to make a coil or relay about 6 or 8 inches long to operate off two or three dry cells. I wish to have the magnets or core large enough so as to be very powerful, as strong as it is possible to make it without running down the battery too soon. I will say that the circuit on which I intend to use it will close by a push button at intervals and the load will not be on the battery over 15 or 20 seconds every 10 minutes. If you will advise me as to what size core and what size wire, and how much wire or turns around the core I will appreciate it.

Suppose you use iron which has one inch cross section, it may be round or square. Bend it in U-shape such that the total length of the path of the lines of magnetic force is about 16 inches. Wind on 650 to 700 turns of No. 20 black enameled copper magnet wire (advertised in TELEPHONY). This will pull from ¾ to one ampere from your battery. If you want greater economy of current, you can wind on about 1,300 turns of No. 26 black enameled wire, which will still give you a very good pull on about one-tenth ampere.

### Duties of an Operator.

If a subscriber calls for some one and that line is busy, shouldn't the central later on call the parties for him without his calling up again? What I mean is, would not this method be a great benefit to the standing of the company?

Would an operator rightfully be excused from this duty if she were over-worked?

Just how much is rightfully to be expected from an operator is an open question, and one which is usually best settled by the nature of local conditions. In large exchanges such an accommodation is out of the question, as the operators are worked up to the limit of their ability nearly all the time. On small exchanges the subscriber has no right to *demand* such service, but if the operator has the time it certainly will add to the standing of the company if the operators accommodate the subscribers in this way. From the standpoint of the operator herself, she should use every means within her power to make the public think well of the company and its service. But if she is at times overworked, she is rightfully excused.

TO WIRE CHIEFS AND MAINTENANCE MEN.

*Clearing of troubles which occur in your exchange, inside or outside, may be made the subject of short, practical letters which will interest other telephone men These* TELEPHONY *will gladly publish, if illustrated by diagrams or photographs. Simply write a description of the nature of the trouble, tests and location, cause found, and method of repair. Payment will be made for all letters published.*

### Bad Ground Connections.

We have 16 rural lines, three toll wires and about 90 lines in town. At times the cross-talk is terrible. Our lines are all grounded in the switchboard. Would it be advisable to ground each rural line at a place by itself? We wish at least to reduce this trouble. The board has been used about five years. Also one subscriber has two telephones placed on the wall of his house about eight feet apart. One of them connects to an Independent company's board and the other to a mutual board. The two ground wires from the telephones connect to the same ground rod. When the subscriber rings the Mutual company's telephone the drop at the Independent board will fall. Please explain.

There are two causes which go to giving you cross-talk. One is the high resistance of your ground connection and the other is very likely to be the fact that the rural lines run parallel. If you run the main ground connection at central deeper down, until you get to permanent moisture, and have

plenty of surface exposed to the moist dirt, it will reduce the trouble very materially. Grounding on separate rods will also do much good. But it is very likely that most of the trouble comes from running ground lines parallel for some distance. Try removing one of the worst lines from the common ground and putting it on a good rod alone. Test the cross-talk by changing it from the common ground to its own separate ground while people are talking and see if you notice improvement. The only real cure for cross-talk is to make the lines metallic.

The ground connection at the subscriber's station with two telephones must be very poor, so that, when he rings, part of the current goes over the wrong line. This trouble is very common where but one rod is used. I would change to separate rods.

### Trouble in Ringing Central.

I have recently installed a new 100 drop magneto switchboard. Formerly I had some lines divided in two sections and had the two lines terminate on two telephones and in this way received all incoming signals fairly well. One of these lines had 24 telephones on it and the other had 22.

After installing the switchboard I divided these two lines into five sections, and put each on a drop. Two lines now have five telephones each, and the service is first class. The third line is 6 miles long, No. 11 wire, all joints soldered, with 13 telephones. Only a few of them will throw the drop. I get all signals clearly on a bell which I installed while the drop remains up. I have the same kind of trouble on two more lines. All lines have joints soldered. I use ground return circuit on all these five lines, and am very positive that I have a good ground. The lines are all fairly free of limbs, etc. The service is just the same when weather is cold as when warm.

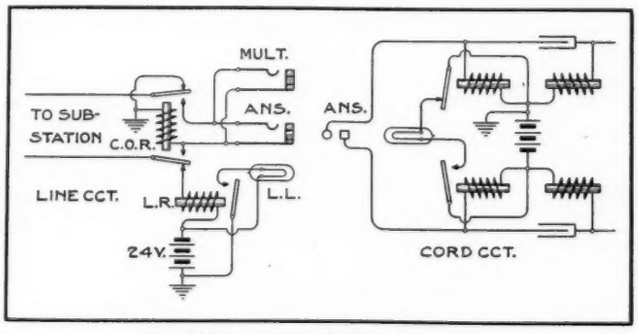
I had 450 ohm resistance coils in the drops and later changed to 300 ohms, with not the least bit better results. What is the matter? Can you suggest anything?

Keeping in mind the fact that a bell is usually more sensitive than a drop, and will respond to smaller current, it looks as if you have some poor drops on your board. Try changing one of the troubled lines from its own to another drop and see if the line can ring in. Do this with many drops till you get the run of them. If they all tend to act the same, send for a sample drop of another make and try it. If it works all right, state the facts to the maker of your board and insist on his replacing every drop with one which is more sensitive.

### Line, Supervisory, and Cut-Off Relays.

Will you kindly tell me the resistance of the supervisory, line, and cut-off relays in the Kellogg and Dean common battery line and cord circuits? Also explain the essential difference between the two.

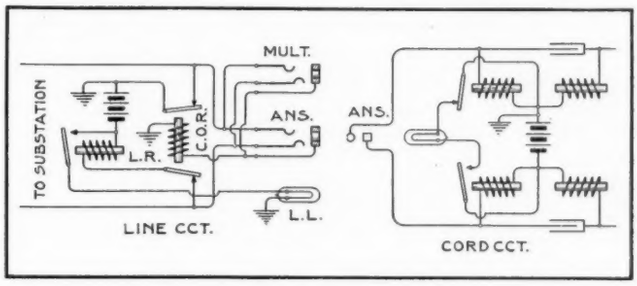
In the Kellogg common battery switchboard the cut-off relay is 500 ohms, the supervisory relay 100 ohms, and the line relay 500 ohms. In the Dean system, the cut-off relay is 500 ohms, the supervisory relay 100 ohms, and the line relay 1,000 ohms. The Kellogg is a straight 2-wire multiple system, having but two conductors in both plug and jack. The line from the subscriber must pass *through* the contacts of the cut-off relay, not




Essentials of the Kellogg System.

merely *past* them. This is so that the latter relay can switch the line wires *from* the line relay and battery *to* the jack. The cut-off relay is wired from sleeve to ground, and is held up by negative battery fed through a relay to the cord sleeve.

The Dean is a 2-3-wire system, there being two conductors in the plug, and three in the jack. The sleeve of the plug is long enough to touch both ring and sleeve of jack, so that when inserted we have really a 2-wire condition. The wires from the subscriber do not run *through* the contacts of the cut-off relay, but merely *past* them, so that while talking there are no




Essentials of the Dean System.

contacts in the main path, only soldered joints. The cut-off relay is held up in the same manner as in the Kellogg system, and supervision is accomplished in the same way.

### Ground on Metallic Line.

Our telephone system is largely composed of rural lines, nearly all of them being full metallic and the village common return and grounded lines. One full metallic rural line seems to talk very well and ring up central very well and there is really not any noticeable trouble in connecting with any other full metallic telephone in town or on a rural line. But when connected to a grounded line it is exceedingly dim—not usable, in fact, without the use of a repeating coil in the cord circuit, and even then it is not up to "good service." There are some indications of a ground on one side of the pair, but we cannot detect any by a thorough examination of the line and terminal connections. We are not able to determine by any tests we know how to make that there is any difference in the resistance on the lines or on which side the ground is, if on either. We have no bridge set, and do not find the receiver in series with dry cells nor our lineman's test set sensitive even with some resistance coils we have of our own winding. What tests can you suggest?

There is not any doubt about your having a ground on the line somewhere. Try the following, to check it. Connect the faulty line with another metallic and get two persons to talking over them. Put a dead ground on the good metallic, trying first one side then the other. If there is a ground on the faulty metallic, the talking will be greatly weakened when you ground the *opposite* side of the good metallic.

A good, sensitive series telephone is a very good test set for small exchanges. Do not rely on lineman's test sets. As a rule, they are too weak. The series telephone should be able to ring its own bell through a pail of water, with a very little salt dissolved in it. With such a series telephone, test from ground to each side of the faulty line. If there is enough ground on the line to cause the action described, the series bell will ring at least faintly.

You may find that your trouble is in the jack of that line. Test the line at the distributing frame or board, with the switchboard disconnected. Then test again with the board connected. Finally test with a plug in the jack. Sometimes the jack may be worn enough so that when the plug is inserted it pushes one of the springs over against the frame.

### Weak Bells.

I have quite a number of 1600 ohm bridging telephones on a grounded line, on which the bells ring so faintly that they are almost worthless. The ground is good, the generators ring other telephones strongly, and they talk up well. I have adjusted them, but can get no better results. The telephones scarcely ring their own bells. What can I do for them? I have been taking old movements off and replacing them with new ones.

This is a case of weak ringer movements, and the only thing to do is either send them back to the maker for new ones or buy new bells entirely of another make. If I were you, I would, as a test, buy one or two complete bells of another make and try them on these telephones. If they do the business, and the maker of your telephones can not furnish you with a bell which will, your course is clear.

# Telephone News

### Home Company Wins at Crawfordsville, Indiana.

The Home Telephone Company, of Crawfordsville, Ind., has won a complete victory over its competitor, which tried to block the efforts of the Independent concern to obtain a new franchise providing for a proper rate. The contest has been an exceedingly severe and bitter one, in which the promoting faction of the Bell company exercised all their skill. The features of the struggle were somewhat spectacular, at times, and the monopoly idea was so fully exploited that the final support of the influential people which has been granted the Home company is a conspicuous victory for Independent principles.

Last spring Mr. J. K. Johnston went to Crawfordsville, with a record as an able manager and thoroughly competent construction man, to rebuild the exchange. The first step was to apply for a franchise which would allow the company to rebuild its plant, and prepare to give as extensive and efficient service as the growing needs of the city should require.

The Central Union company was prompt to start a publicity campaign to promote a consolidation. Although experienced telephone men were aware that the move was one "for revenue only," planned to swing control into the hands of the Bell company, it for a long time had a strong hold on the public feeling. The Commercial Club seemed at times to have given favorable consideration to the Bell proposition, but, after eight months of discussion, in sixteen separate meetings, has declared emphatically in favor of the Home company. This decision was reached as a result of investigations made by committees of the club, who have made an elaborate and careful investigation of the telephone situation throughout the country.

The committee made to the Commercial Club a report in which it recommended a new franchise for the Independent company, increasing the rates $3.00 per year on both residence and business telephones. It also provides that in case the rates charged are not sufficient to pay the operating expenses and 6 per cent on the investment, and a replacement and renewal fund of 6 per cent, the rates can be raised without securing a new franchise. The committee, in its report to the Commercial Club, recommended that the Commercial Club and telephone users of Crawfordsville give to the Home Telephone Company their undivided support.

The Bell company is said to have made promises, in the early part of the contest, by which it refused to abide when they were set down in the form of a contract. The Central Union people are reported to have lived up to their reputation as poor losers by saying that the Commercial Club had been unfair with them, when the final report had been made, and insinuating that it looked to them as if everything was cut and dried.

### Kinloch 1908 Statement Shows Increased Earnings and no Floating Debt.

The Kinloch Long Distance Telephone Co., of St. Louis, reports that earnings in 1908 were $1,220,877.28 and expenses $603,907.65, leaving net earnings of $616,969.63, of which $104,750 went to dividends, bond interest, depreciation, etc. The revenue increased over 1907 by $81,726.45 when, through an increase in expense, the net profit increased $87,692.97. The items of revenue include $1,090,586.19 from exchange served and $121,288.38 from tolls. The net earnings of the company were two and one-half times the interest on the bonds. The company is entirely free from debt, having paid off during the year its floating indebtedness, which on January 1, 1908, was $311,000. The plant valuation is placed at $8,364,826.

The Kinloch Company elected the following directors: Adolphus Busch, C. Marquard Forster, August Gehner, James Green, Breckenridge Jones, S. M. Kennard, William J. Lemp, Jr., Henry Nicolaus, William H. Nolker, William D. Orthwein, Philip Stock, Julius S. Walsh and Rolla Wells.

### Annual Report United States Telephone Company of Ohio.

The annual report of President Brailey, of the United States Telephone Company, submitted to the directors and stockholders on February 23, is an important testimonial to the success of the Independent telephone business of Ohio. The following is a comparative statement of the earnings and surplus for 1907 and 1908:

| | 1907. | 1908. |
|---|---|---|
| Total revenue | $ 600,596.07 | $ 610,576.74 |
| Other co.'s revenues | 165,582.64 | 165,728.02 |
| Gross earnings | $ 435,013.43 | $ 444,843.72 |
| Total expenses | 190,956.09 | 197,546.21 |
| Net earnings | $ 244,057.34 | $ 247,302.51 |
| Other income | 32,061.00 | 27,682.89 |
| Total net earnings | $ 276,118.34 | $ 274,985.40 |
| Bond interest | 107,800.00 | 107,800.00 |
| Surplus | $ 168,318.34 | $ 167,185.40 |
| DEDUCTIONS. | | |
| Dividend preferred stock | $ 51,150.00 | $ 51,855.00 |
| Dividend common stock | 69,750.00 | ..... |
| Depreciation | 8,256.00 | 14,330.63 |
| Total deductions | $ 129,156.49 | $ 66,185.63 |
| Net surplus | $ 39,161.85 | $ 100,999.77 |

The balance sheet as of December 31, 1908, compares as follows:

| ASSETS. | 1907. | 1908. |
|---|---|---|
| Property and plant | $4,840,924.34 | $4,941,166.16 |
| Material and supplies | 43,507.04 | 27,422.20 |
| Treasury stock preferred | 30,000.00 | 30,000.00 |
| Treasury bonds | 434,000.00 | 434,000.00 |
| Current assets | 138,769.36 | 112,869.12 |
| Investments | 1,602,514.71 | 1,679,262.60 |
| Total | $7,089,715.45 | $7,224,720.08 |
| LIABILITIES. | | |
| Capital stock, common | $3,100,000.00 | $3,100,000.00 |
| Capital stock, preferred | 882,500.00 | 959,500.00 |
| Mortgage bonds | 2,590,000.00 | 2,590,000.00 |
| Current liabilities | 307,219.47 | 284,719.17 |
| Accrued liabilities | 30,627.09 | 20,194.83 |
| Surplus | 179,368.89 | 270,306.08 |
| Total | $7,089,715.45 | $7,224,720.08 |

The following statement shows the combined earnings, expenses and surplus of the eight subsidiary companies for the year 1908 compared with 1907:

| | 1908 | 1907 | Increase |
|---|---|---|---|
| Gross earnings | $374,813.34 | $365,366.45 | $ 9,446.89 |
| Expenses | 216,139.93 | 213,610.73 | 2,529.20 |
| Net earnings | $158,673.41 | $151,755.72 | $ 6,917.69 |
| Income from investment | 303.44 | ..... | 303.44 |
| Total net earnings | $158,976.85 | $151,755.72 | $ 7,221.13 |
| Bond interest | 51,625.00 | 51,625.00 | ..... |
| Surplus | $107,351.85 | $100,130.72 | $ 7,221.13 |
| Deductions: | | | |
| Dividend, preferred stock | $ 14,340.00 | $ 14,340.00 | ..... |
| Dividend, common stock | 12,400.00 | 19,350.00 | *6,950.00 |
| Total deductions | $ 26,740.00 | $ 33,690.00 | $*6,950.00 |
| Net surplus | $ 80,611.85 | $ 66,440.72 | $ 14,171.13 |

*Decrease.

The property of the company was well maintained during the year and it is now in first class condition. During the year new construction was completed at a cost of $129,711.22. President Brailey recommended the installing of new circuits during 1909 at a cost of approximately $200,000. He also recommended the installation of a pole line between Byesville and

Barnesville and circuits provided between Columbus, Wheeling and Pittsburg, at an approximate cost of $66,000. On December 31 there were in the employ of the company 245 employes; the average pay roll was $7,762.19 per month, an average of $31.64 per employee.

### Franchise Contract Ratified by Indianapolis Council.

After several months of consideration the city council of Indianapolis on March 1 passed an ordinance ratifying an amended franchise contract between the Board of Public Works and the New Telephone Company and the Indianapolis Telephone Company, signed by the Board and Mayor July 6, 1908. By the terms of the new contract the companies (lessee and lessor) are authorized to construct, equip and maintain their plant for a period of thirty years, and it also permits of an increase in rates. Of the twenty-one council men, only four voted against the ordinance.

CITY MAY PURCHASE.

The contract provides that at any time not less than three months nor more than six months from the expiration of the period covered by the franchise, if a new franchise has not been granted, the city shall have an option on all the prop- of the companies and may purchase at market value.

INCREASE IN RATES.

The new schedule of rates granted by the franchise includes unlimited exchange service until such time as the companies shall have 15,000 line telephones to which these rates apply, and are set out as follows:

Residence Service.—On all residence service a discount of fifty (50) cents per quarter will be allowed from the following rates, when the rental for the quarter is paid at the office of the company on or before the tenth day of the first month of the quarter.

1. Twenty ($20) dollars per annum for each subscriber on a divided circuit of not more than four ()4 telephone instruments.
2. Twenty-four ($24) dollars per annum for each subscriber on a divided circiut of not more than two (2) telephone instruments.
3. Thirty ($30) dollars per annum for each subscriber on an individual circuit of not more than one (1) telephone instrument.

Business Service.—1. Thirty-six (36) dollars per annum for each subscriber on a divided circuit of not more than two (2) telephone instruments.

2. Fifty-four ($54) dollars per annum for each subscriber on an individual circuit of not more than (1) telephone instrument.

READJUSTMENT OF RATES.

It is provided that after 15,000 line telephones are in use the companies are authorized to make an additional charge for each business telephone of $2 and for each residence telephone $1 a year, and thereafter, at their option, to increase the rate for telephone service at the same proportion for each additional 1,000 line telephones until 25,000 telephones are put in service. These rates for service, as provided by the contract, shall continue for five years, after which time the Board of Public Works may, under certain defined conditions, demand a revision and readjustment of existing rates.

TAX TO THE CITY.

The franchise provides for the payment of a tax by the companies to the city of $6,000 a year, said recompense tax to be a first lien on the companies' property on failure of payment with a penalty of 50 per cent on the whole amount as liquidated damages for breach of contract.

IMPROVEMENTS.

The franchise provides that the Indianapolis Telephone Company shall improve, enlarge and extend its plant, expending not less than $500,000 within the next three years, the first half of this, at least, within the next eighteen months. The officials say the work will begin at once and pushed forward as rapidly as possible.

MUST CONNECT WITH OTHER COMPANIES.

The contract provides that the companies must connect their lines with those of any and all other companies doing business outside the city and within the state, provided these companies make application for such connection and have constructed their lines to the city limites.

OPPOSITION OVERCOME.

It is doubtful if any similar franchise ever met with so much unjust and selfish opposition as this one. To begin with the letting of the contract by the Board of Public Works and Mayor was bitterly opposed by an anti-administration newspaper campaign and subsequently a commission of experts was appointed at the instigation of the Board of Trade and Commercial Club to appraise the company's property and report the relief necessary, if any, and following this the proposition was carried into the courts by the State Attorney assisted and abetted by the Bell Telephone Company, with a view of forcing a consolidation or merger with the Bell company, resulting in three trials, all of which were won by the Indianapolis Telephone Company. It is now believed that no further action will be taken by the opponents of the companies, and the new plant will soon be completed and the service improved so as to equal that of any city in the country.

### Annual Report Cuyahoga Telephone Company.

The strong condition of the Cuyahoga Telephone Company of Cleveland, Ohio, is indicated by the following report for the year 1908:

Comparative Condensed Financial Statement. December 31, 1908 and 1907:

RESOURCES.

| | December 31 1908 | December 31 1907 | Increase |
|---|---|---|---|
| Property and plant | $6,075,244.18 | $6,088,311.27 | *$13,067.09 |
| Treasury bonds | 492,000.00 | 500,000.00 | *8,000.00 |
| Treasury stock, preferred | 62,650.00 | 62,650.00 | ..... |
| Current Assets | 178,972.33 | 106,380.58 | 72,591.75 |
| Deferred Assets | 2,724.74 | 3,210.07 | *485.33 |
| | $6,811,591.25 | $6,760,551.92 | $ 51,039.33 |

LIABILITIES.

| | December 31 1908 | December 31 1907 | Increase |
|---|---|---|---|
| Capital stock, common | $1,500,000.00 | $1,500,000.00 | ..... |
| Capital stock, preferred | 1,500,000.00 | 1,500,000.00 | ..... |
| Mortgage bonds | 3,200,000.00 | 3,200,000.00 | ..... |
| Current liabilities ‡ | 274,600.53 | 376,457.98 | *$101,857.45 |
| Deferred liabilities ‡ | 35,949.63 | 37,937.55 | *1,987.92 |
| Reserve accounts | 1,425.00 | 1,057.03 | 367.97 |
| Surplus | 299,616.09 | 145,099.36 | 154,516.73 |
| | $6,811,591.25 | $6,760,551.92 | $ 51,039.33 |

‡Not due.
*Decrease.

Comparative Statement of Earnings and Expenses for the Years Ending December 31st, 1908 and 1907:

REVENUE.

| | 1908 | 1907 | Increase |
|---|---|---|---|
| Rentals, telephone | $ 706,925.91 | $ 665,911.75 | $ 41,014.16 |
| Toll Service (L. D.) | 11,321.88 | 11,276.78 | 45.10 |
| Toll service (suburban) | 6,808.25 | 5,520.00 | 1,288.25 |
| Toll service (exchange) | 38,458.60 | 38,238.83 | 219.77 |
| Rentals Electric building | 62,787.00 | 60,250.28 | 2,536.72 |
| Miscellaneous | 1,707.79 | 388.08 | 1,319.71 |
| Gross revenue | $ 828,009.43 | $ 781,585.72 | $ 46,423.71 |

EXPENSES.

| | 1908 | 1907 | Increase |
|---|---|---|---|
| Service Expense | $ 89,433.01 | $ 92,722.69 | $ 3,289.68* |
| Maintenance | 115,078.91 | 143,608.54 | 28,529.63* |
| Renewals | 15,112.63 | ..... | 15,112.63 |
| General Expense | 69,375.07 | 74,308.84 | 4,993.77* |
| Taxes | 39,237.49 | 36,272.67 | 2,964.82 |
| Interest and Exchange | 15,916.60 | 19,308.79 | 3,392.19* |
| Electric Building Expense | 32,454.89 | 30,260.43 | 2,194.46 |
| Leased Lines and Contracts | 1,123.65 | 1,424.59 | 300.94* |
| Total Expenses | $ 377,732.25 | $ 397,906.55 | $ 20,174.30* |

SURPLUS.

| | 1908 | 1907 | Increase |
|---|---|---|---|
| Gross Revenue | $ 828,009.43 | $ 781,585.72 | $ 46,423.71 |
| Total Expenses | 377,732.25 | 397,906.55 | 20,174.30* |
| Net Revenue ‡ | $ 450,277.18 | $ 383,679.17 | $ 66,598.01 |
| Reserves | 70,698.97 | 21,463.90 | 49,235.07 |
| Total Net Income | $ 379,578.21 | $ 362,215.27 | $ 17,362.94 |
| Bond Interest | 135,300.00 | 135,000.00 | 300.00 |
| Dividend on Preferred Stock | 86,241.00 | 86,222.25 | 18.75 |
| Dividend on Common Stock | ..... | 45,000.00 | 45,000.00* |
| Total | $ 221,541.00 | $ 266,222.25 | $ 44,681.25* |
| Surplus | $ 158,037.21 | $ 95,993.02 | $ 62,044.19 |

‡Net revenue approximately 3½ times bond interest for the year 1908.
*Decrease.

Cleveland, Ohio, Feb. 23, 1909.

To the Directors and Stockholders of The Cuyahoga Telephone Company:

Following is a report of the affairs of your company for the year ending December 31, 1908, together with certain comparisons with preceding years.

The present management took charge early in May, 1906, at which time new systems were installed in th construction, maintenance, record and accounting departments.

A comparative statement of earnings, expenses and surplus for the five years ending December 31, 1908, follows:

Earnings, expenses and surplus for five years ending December 31, 1908.

| | 1904 | 1905 | 1906 | 1907 | 1908 |
|---|---|---|---|---|---|
| Gross Earnings | $435,274.02 | $587,487.01 | $716,627.13 | $781,959.71 | $827,363.53 |
| Total Expenses | 262,540.62 | 369,609.93 | 385,041.29 | 395,580.87 | 377,732.25 |
| Net Earnings | $172,733.40 | $217,877.08 | $331,585.84 | $386,378.84 | $449,631.28 |
| Deductions | $ 6,137.09 | $ 10,082.34 | $ 26,467.32 | $ 5,179.34 | ..... |
| Total Net Earnings | $166,596.31 | $207,794.74 | $305,118.52 | $381,199.50 | $449,631.28 |
| Investment Income | ..... | ..... | ..... | ..... | 645.90 |
| Bond Interest | $111,650.00 | $124,464.43 | $135,000.00 | $135,000.00 | $135,300.00 |
| Surplus | $ 54,946.31 | $ 83,330.31 | $170,118.52 | $246,199.50 | $314,977.18 |
| DEDUCTIONS. | | | | | |
| Preferred Stock Dividend | $ 43,955.25 | $ 51,398.40 | $ 81,103.50 | $ 86,222.25 | $ 86,241.00 |
| Common Stock Dividend | ..... | ..... | 45,000.00 | 45,000.00 | ..... |
| Depreciation | ..... | ..... | 15,000.00 | 18,984.23 | 60,698.97 |
| Reserve for Bad Accounts | ..... | 38,232.74 | ..... | ..... | 10,000.00 |
| Total Deductions | $ 43,955.25 | $ 89,631.14 | $141,103.50 | $150,206.48 | $156,930.97 |
| Net Surplus | $ 10,991.06 | *$ 6,300.83 | $ 29,015.02 | $ 95,993.02 | $158,037.21 |

*Decrease.

In discussing the report President Brailey said:

"It will be seen that the increase in gross earnings, net earnings and surplus for 1908 over 1904, was as follows:

| | | Per cent |
|---|---|---|
| Gross earnings, 1908 over 1904 | $392,089.51 | 90 |
| Net earnings, 1908 over 1904 | 276,897.88 | 170 |
| Surplus, 1908 over 1904 | 260,030.87 | 475 |

"The increase in surplus under your management, as compared with the two previous years, is, in fact, greater than appears from the above, when it is borne in mind that during 1904 and 1905 no charge for depreciation was made, and no dividends were paid on the common stock; whereas during the last three years the charges for depreciation and dividends on the common stock aggregate $184,683.20.

"While gross earnings for 1908 showed an increase of 90 per cent over 1904, the comparative increase in expenses for the same periods was but 44 per cent.

"From the accountants' statement it will be seen that your company's current assets during the year 1908, have increased $72,591.75, and current liabilities have been reduced $103,845.37, amounting to a net increase of $176,487.12 for the year.

"Increase in current assets is made up as follows:

| | | |
|---|---|---|
| Cash | | $ 26,691.38 |
| Investments: | | |
| Real Estate | 19,000.00 | |
| Stock Securities Weekly | 500.00 | |
| $35,000 par value U. S. telephone bonds | 26,317.55 | |
| Inventory (supplies) | 7,289.64 | |
| Sundry assets | 337.57 | |
| | $ 80,136.14 | |
| Less reduction in bills and accounts receivable | 7,544.39 | |
| | $ 72,591.75 | |

Decrease in current liabilities is made up as follows:

| | |
|---|---|
| Accounts payable | $ 64,155.29 |
| Bills payable | 35,039.02 |
| Bank overdraft | 2,663.14 |
| Accrued accounts | 1,987.92 |
| Total | $103,845.37 |

CREDIT OF THE COMPANY.

"During the past year the credit of your company has been maintained and improved. The average bank balances have exceeded $50,000, all current bills being paid promptly at maturity. The audited vouchers, which amounted to $50,508.32 at the close of the year 1908, have since been reduced until they amounted on February 1, 1909, to $34,383.67.

COLLECTIONS.

"The following is a comparative statement of the charges and collections for the four years ending December 31, 1908:

| | 1905 | 1906 | 1907 | 1908 |
|---|---|---|---|---|
| Charges for year | $646,392.76 | $811,284.11 | $886,262.49 | $935,319.79 |
| Less Cash Discounts, Com. Cancellations, etc | 6,351.19 | 41,765.29 | 57,816.71 | 44,192.17 |
| Net Charges for Year | $640,041.57 | $769,518.82 | $828,445.78 | $891,127.62 |
| Balance January 1st from Previous Year | $ 26,695.48 | $ 63,723.82 | $107,835.56 | $ 66,700.17 |
| Net to Collect | $666,737.05 | $833,242.64 | $936,281.34 | $957,827.79 |
| Cash Collections for Year | $603,013.23 | $725,407.08 | $869,581.17 | $899,324.31 |
| Outstanding | $ 63,723.82 | $107,835.56 | $ 66,700.17 | $ 58,503.48 |

"On the above statement, it will be seen that during the years 1907 and 1908, the amount of cash actually collected exceeded the net charges placed on the books for 1907 and 1908.

"Of the $58,503.48 carried over on December 31, 1908, $42,073.16 was for telephone rentals and the balance was for tolls and rents from Electric building.

"For the past two and one-half years it has been the policy of the company to rewrite its contracts at an annual increase of $4.00 in main line business and two-party business, and main line residence telephones; $3.00 on four-party business and two-party residence telephones, and $2.00 on four-party residence telephones, and then allow discounts of $1.00, 75c and 50c per quarter for payment during the first month of the quarter. All new contracts for the past two years have been taken on this plan and a great number of old contracts have been re-written, so that on December 31, 1908, 60 per cent of the contracts of the company contained the discount feature.

"Under the present system of accounting and management, collections have materially increased, and your company has not only paid vouchers promptly at maturity, but has largely decreased its floating indebtedness.

EARNINGS AND EXPENSES.

"Gross earnings for 1908 increased over 1907 $46,423.71, an increase of $1.79 per telephone. Expenses during the same period decreased $20,174.30, or 71 cents per telephone, increasing the net earnings for the same period $66,598.01, or $2.50 per telephone.

"The above was accomplished by changing party line telephones to main line service, increasing tolls and the saving in expenses.

MAINTENANCE.

"The policy of your management has been to better the physical condition of the plant. To this end in the past two years it has recabled a majority of the office buildings in the city, putting in lead sheath cable instead of duplex wire construction. This has reduced the trouble in the down-town district about 50 per cent. In quite a number of places on the aerial plant open wire has been replaced with cable construction, thereby bettering service and physical conditions.

RENEWALS AND REPLACEMENTS.

"During the year $60,698.97 was charged to reserve for renewals and replacements, which is ample to cover all renewals for the year.

SERVICE.

"The general service furnished our subscribers is good. Stop watch tests made by experienced inspectors indicate the average time in which calls are answered by operators to be 4.1 seconds. Subscribers in general are well satisfied.

"In the year 1905, we operated an average of 17,756 tele-

phones, answering 51,516,324 calls, or an average of 2,901 calls per telephone at a cost to subscribers of $.00717 per call.

"During the year 1908 we operated an average of 24,600 telephones and answered 74,926,422 calls, an average of 3,042 calls per telephone at a cost to subscribers of $.00514 per call. The cost per call to subscribers has been materially reduced.

CONSTRUCTION.

"But $23,710.29 of construction work was done during the year. On account of the general depression in business the cost of construction was limited to the lowest possible amount.

ELECTRIC BUILDING.

"The earnings of the Electric building were increased $2,537.00 over the year 1907. Two thousand dollars was spent in renewing steam pipes and putting in auxiliary steam leads, so that now the power plant is in first-class condition.

GENERAL.

"The general condition of your property is good and your business is in a healthy state. In the past two years but little development work has been done, and all expenses incidental to the creation of business have been eliminated.

"In accomplishing the results shown, your management has had the support of a capable and loyal organization, it being the object to maintain a strong and intelligent force always working in harmony and much of the success is due to the organization.

"On December 31, 1908, there were in your employ 477 employes, and the average pay roll was $20,875.63 per month, an average of $43.76 per employe."

## Iowa Convention Program.

Iowa will have this year the biggest and most interesting convention of its history. Following is the complete program, which shows the fun and business features which make it worth any man's while to attend:

TUESDAY, MARCH 9.

2 o'clock p. m.

Meeting called to order.
Reading Minutes.
Report of Officers and Committees.
Appointment of Regular and Special Committees.
Presentation of New Business.

WEDNESDAY, MARCH 10.

10 o'clock a. m.

Meeting called to order.
Address.....E. H. Moulton, Minneapolis
Pres. International Ass'n.
Address—"Reasonable Connection Relations".....
.....Wm. Crownover, Hudson
Address—"Reasonable View of the Future".Geo. Atkinson, Creston
Address.....W. J. Thill, Des Moines
Mgr. Clearing House.

WEDNESDAY, MARCH 10.

2 o'clock p. m.

President's Address—"Reasonable Returns on Investment"...
.....J. H. Shoemaker, Waterloo
Address.....John MacVicar, Des Moines
Supt. Street and Public Improvements.
Address—"Reasonable Construction for Small Companies"....
.....J. M. Plaister, Fort Dodge
Address.....Howard S. Baker
Pres. and Mgr. Sioux City Telephone Co.

THURSDAY, MARCH 11.

10 o'clock a. m.

Address—"Reasonable Accounting for Small Companies".....
.....C. A. Peterson, Manchester
Address—"Reasonable Attitude Toward Public".....
.....P. C. Holdoegel, Rockwell City
Address—"Reasonable Objects of Accounting".....
.....George R. Fawkes, Waterloo
Address—"Value of Timber Preservation".....
.....George H. Ehrich, Chicago

THURSDAY, MARCH 11.

2 o'clock p. m.

Election of officers.

Hundreds of telephone men have signified their intention of putting in the entire three days at the convention, and of bringing friends and stockholders with them.

## Annual Meetings of Cuyahoga and U. S. Telephone Companies, in Ohio.

The annual meetings of the Cuyahoga and United States Telephone Companies resulted in an almost complete reorganization of both companies. The boards of directors of both companies are now exceedingly strong, and development will go forward with increased harmony and vigor.

At the meeting of the Cuyahoga stockholders C. A. Otis, Bascom Little, William L. Rice and E. G. Tillotson were new members elected. Norman C. McLoud and M. C. Harvey were also elected to the board but it is expected that they will shortly resign and their places will be filled with two other Cleveland business men. The directors re-elected were James S. Brailey, Jr., of Toledo; H. A. Everett, E. W. Moore, B. Mahler and A. H. Bauer, of St. Louis. Of the eleven directors ten are Cleveland men. At the meeting of the Cuyahoga board of directors E. G. Tillotson, formerly executive officer of the Cleveland Trust Company, was made president. C. Y. McVey resigned as general manager of the United States and was elected vice president and general manager of the Cuyahoga Telephone Company.

The new board of directors of the United States company is as follows: C. A. Otis, E. G. Tillotson, E. W. Moore, A. H. Bauer, H. C. Stifel, J. S. Brailey, Jr., Claude Ashbrook, Clarence Brown, A. B. Taylor, H. B. Taylor, W. L. Carey, Jr., and B. Mahler.

It is understood that H. B. Taylor and W. L. Carey, Jr., will later resign to be replaced by two men selected by the Ohio Telephone Association, the idea being to give the state association representation on the United States board for the reason that all of the Independent telephone companies of Ohio have contracts to do business with the United States company. E. G. Tillotson was selected as chairman of the board of the United States; James S. Brailey, Jr., president; Clarence Brown, of Taylor, vice-president; W. L. Carey, Jr., secretary, and H. B. Taylor, treasurer.

There was no selection of a secretary nor a treasurer of the Cuyahoga Telephone Company; the present officers, viz., Mr. Carey and Mr. Taylor, will continue until Mr. Tillotson has had time to look over the situation. The Cuyahoga board was reduced from 15 to 11 members, and important changes were made in its by-laws at the instance of Mr. Tillotson.

Plans for large extensions to the Cuyahoga and United States companies are under consideration and will undoubtedly be carried out. These include, so far as the Cuyahoga is concerned, the erection of a new east end exchange, land for which was purchased a few years ago. The building of these new exchanges will very greatly relieve the down town exchange and provide for the installation of several thousand additional telephones. The United States improvements include the building of new lines at an expense of probably $250,000. Money will also be provided with which to improve the various subsidiary companies owned by the United States Telephone Company. The financial reports of both companies show that these are now in the front rank of utility corporations. The reports are printed in other columns.

## Dallas Conduit System Started.

Complying with the terms of its franchise, the Independent Telephone Company, of Dallas, Texas, has started work on its conduit system. It is stated by manager F. C. Casler that good progress is being made on the work of laying out the system, and that work will go forward steadily this Spring.

## INDEPENDENT TELEPHONE CONVENTIONS

**Iowa, Des Moines, March 9, 10, 11; Kansas, Topeka, March 16, 17, 18; Ohio, Columbus, March 18, 19; Michigan, Saginaw, March 24, 25; Missouri, Jefferson City, May 19, 20**

### Ohio Company Cuts Out Free County Service.

Following is the text of a letter sent out to its subscribers by the Tuscarawas County Telephone Company, of New Philadelphia, Ohio, to announce the inauguration of charges for county service:

"At a meeting of the Board of Directors of the Tuscarawas County Telephone Company it was found necessary to limit the free county toll service in order to take care of the business traffic during the business hours. Our local or county toll business has increased to such an extent, due to the fact that we have added a large number of subscribers within the past 18 months, so that we are unable to handle the free business with our present lines. Therefore, it has become necessary for us to string additional copper circuits, and the company cannot afford to spend more money in additional circuits for which they receive no revenue.

"It is the intention of the company to give to its subscribers as large a scope of free service as is possible under the existing rates. This company has always been more liberal with its patrons than any other system in the State, and it is the intention of the company to continue the same as far as it is possible. Therefore, commencing March 1st, a rate of ten (10) cents will be charged on all messages to and from the following places:

From New Philadelphia to Mineral City, Newcomerstown and Uhrichsville.

From Uhrichsville to Canal Dover, Mineral City and New Philadelphia.

From Canal Dover to Newcomerstown, Tuscarawas and Uhrichsville.

From Newcomerstown to Canal Dover, Mineral City and New Philadelphia.

From Mineral City to Newcomerstown, Tuscarawas and Uhrichsville.

From Tuscarawas to Canal Dover, Mineral City and New Philadelphia.

"The above charge will be in force, except between the hours of 6 p. m. and 12 a. m. and on Sunday. You will notice that each exchange will have a total number of over 1,800 subscribers that they will be able to communicate with free, and under this arrangement subscribers may have an opportunity to transact social business free.

"We believe that every business man of Tuscarawas county will agree with us in making a charge of 10c during business hours, provided they may get access to the lines within a reasonable length of time, and with the additional copper lines that we expect to string, ought to offer the subscribers of this company first-class county service."

This change is in line with the best ideas of modern telephone management, inasmuch as it not only enables a company to conduct its exchanges on business principles, but causes it to be prompt to make extensions to keep pace with the demand for service.

### Prominent North Dakotan Arrested for Improper Language at Telephone.

Ex-Adjt.-Gen. T. H. Poole was arrested at Bismarck, N. D., charged with using improper language while talking over the telephone.

It is alleged that he called up the wives of several men whom he dislikes and abused their husbands, and because the telephone operator switched him to the chief of police he turned his abuse on the girl.

The telephone manager sought to have Poole arrested, but County Attorney Stevens refused to issue a warrant. Assistant Attorney General Zurger then took the matter up and will prosecute Poole.

### Nebraska Railway Commission Authorizes Increased Switching Fee.

The Nebraska Railway Commission has issued an order allowing the Antelope County Mutual Telephone Company, of Elgin, to increase its switching rates to farm lines from 25 cents to 50 cents per month. The benefited company is also permitted to sever its connection with the Oakdale exchange if the two are unable to reach an agreement on rates. The connection of the two companies was ordered by the Commission some time ago and since that time the two companies have continually had trouble over compensation for exchange service.

# Telephone Patents

## Conducted by Max W. Zabel

### DRY BATTERY CELL.

Geo. N. Eastman, Riverside, Cal., patent 912,946, Feb. 16, 1909.

This dry battery is designed to prevent overflow of the active material and premature degeneration of the cell. To this end, a zinc cup is spirally wound, and is surrounded by impregnated fibrous material, which is placed around the zinc cup and is arranged to adhere thereto. Insulating material forms the bottom of the cell, and a cap closes the bottom. It is further intended that the insulating covering compound, by closing the upper opening around the zinc cup, prevents overflow of the material. The zinc cup is extended and provided with a binding post at one portion of its periphery.

### SUBMARINE CABLE.

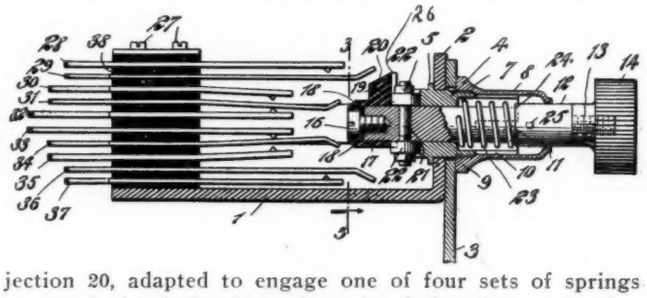
S. G. Brown, London, Eng., patent 912,801, Feb. 16, 1909.

The cable of this patent consists of a central metallic conductor, which is insulated from, but surrounded by, spirally wound wires of iron, which form a metallic covering for the conductor, around which wires another conductor may be placed and insulated therefrom and a further covering of iron wires provided, the object being to create self-inductance in the wire of the cable to overcome the distributed capacity.

### RINGING KEY.

Klas Weman, Buffalo, N. Y., patent 913,080, Feb. 23, 1909.

This four party key is designed to avoid the extra mechanisms needed for indicating the station last called, and to this end has a circular plunger 14, which has a projection 20, adapted to engage one of four sets of springs arranged circularly about the axis of the plunger, so that the plunger is turned in position to actuate any desired springs and, of course, remains in that position until again rotated when calling another station.



## BATTERY HOLDER.

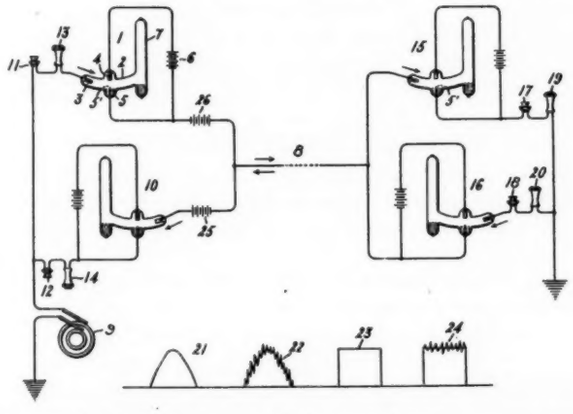
C. T. Mason, Sumter, S. C., patent 912,705, Feb. 16, 1909.

This battery holder is designed to accommodate ordinary forms of dry batteries, and consists essentially of a plurality of sockets mounted in one retaining member. The sockets are of the ordinary size to accommodate the dry battery, and have fingers which engage the zinc covering, and also a central corrugated connecting spring which engages the upper surface of the carbon. When a battery is not in place in its corresponding socket, the socket is short-circuited so that the remaining batteries may continue in operative form.

## MULTIPLEX TELEPHONY.

M. C. A. Latour, Paris France, patent 913,521, Feb. 23, 1909, Assigned to General Electric Co., New York, N. Y.

A system of multiplex telephony is here shown, which consists in the general principle of having an alternating current upon the line wire, which is arranged with four mercury rectifiers at the stations 1, 10, 15 and 16. The mercury rectifiers are so arranged that one permits only the positive half waves of the alternating current to flow therethrough, and the other only the negative half waves. Two transmitters, 11 and 12, are used, one of which impresses voice currents on the positive half waves, and the other on the negative half waves; and likewise the receivers 19 and



20 actuated thereby, due to their associated mercury rectifiers, receive respectively only the positive half waves or the negative half waves.

## TELEPHONE CALL MECHANISM.

W. E. Zabst, Portage, Wis., patent 913,607, Feb. 23, 1909.

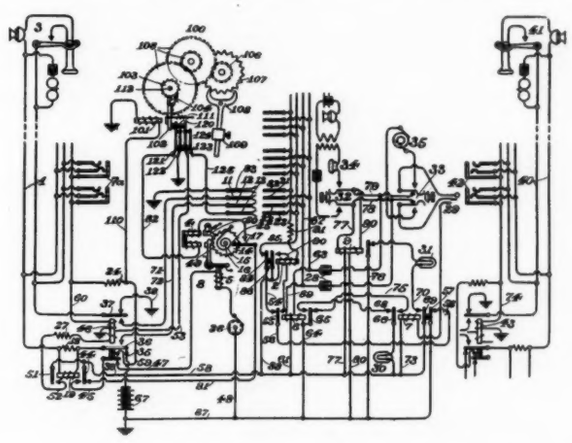
The telephone call mechanism here shown is substantially of a step-by-step nature, but consists in the novel arrangement of having a device which holds the bell clapper rod from vibrating except when the selecting mechanism is operated into its proper position to permit it to reach the gongs. The device is so arranged that it can be mounted immediately adjacent to the ringer framework in the telephone.

## TRUNK SELECTOR.

S. H. Browne, Pittsburg, Pa., patent 913,613, Feb. 23, 1909, assigned to A. T. & T. Co., New York, N. Y.

A novel arrangement for central station apparatus is the subject matter of this patent, and consists essentially in modifying features of older systems, in which the removal of the subscriber's receiver from the switchhook operates mechanism at the exchange which places the calling subscriber's line in a call-initiating position in front of the position of an operator who is not busy. The features of the invention are designed to overcome the release of this trunk selecting mechanism when the subscriber for some reason or other, moves his switchhook slowly up and down, as when trying to attract the attention of the operator.

This novel apparatus consists of the function delaying



element 100, operated by the relay 101, which releases its associated springs, and thereby releases the trunk selector when the receiver is permanently placed on the hook, but which prevents the relay 101 from releasing this mechanism when the hook lever is vibrated, by requiring a considerable portion of time to elapse, due to the escapement mechanism, after the relay has become energized to effect a circuit change in its associated springs.

## TELEPHONE CORD PROTECTOR.

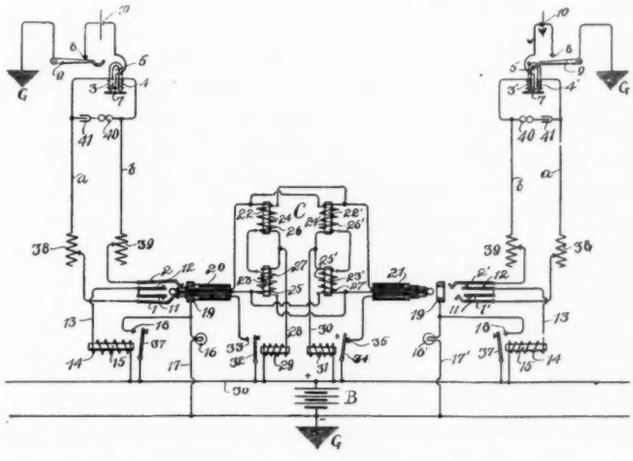
E. T. Banes, Philadelphia, Pa., patent 912,778, Feb. 16, 1909.

This invention contemplates the addition of a soft rubber bushing upon the cord end of telephone plugs, through which the cord projects. The rubber bushing is designed to take the jar away from the cord and at the same time provide a resilient entrance of the cord into the plug, thus to avoid undue wear and tear of the cord.

## TELEPHONE EXCHANGE SYSTEM.

G. Babcock, Rochester, N. Y., patent 913,451, Feb. 23, 1909.

This telephone exchange system is designed to prevent the receiver 5 from operating when the associated trans-



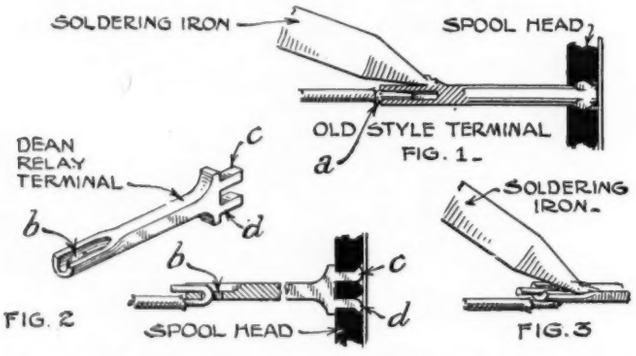
mitter 10 is actuated, so that a person does not hear his own conversation. To this end, the line wires are connected in parallel through the transmitter to ground, and the receiver receives its current serially from the line wires *a*, *b*.

# In the Manufacturing Field

### Relay Trouble.

The ordinary design of relay has been the cause of considerable trouble in common battery exchange installations and much of the difficulty has been due to poor terminal facilities.

The most common terminal is similar to that shown in Fig. 1. It consists of a small brass rod with one end drilled for the




**Construction of the Dean Relay Terminal and Method of Soldering the Connecting Wire.**

insertion of the connecting wire. From the time the terminal is tinned in the factory until the outside wiring is soldered in place, this type is a continual source of trouble and expense.

In doing the tinning operation on the tubular terminal, the acid refuses to enter the opening on account of the presence of enclosed air. Thus it is impossible for the tinning solder to coat the inside. The application of a hot iron to the outside of the terminal in soldering the connecting wires, expands the confined air and tends to force out the solder, so that the only portion which becomes thoroughly fastened is at *a* in Fig. 1. Unfortunately, this small amount of solder is sufficient to hold the wires in place until after the circuits are tested. Then it is liable to give away and make a loose joint, which is extremely hard to locate.

Fig. 2 shows a type of terminal now being manufactured by the Dean Electric Company of Elyria, Ohio. It is constructed from heavy sheet brass, punched and formed into shape. The two prongs *c* and *d* are forced through perforations in the spool head and the inside ends turned over so as to make a secure fastening. This prevents the terminal from being pulled out or forced through the head so as to injure the winding, something which is possible with the ordinary type.

The most valuable feature, however, is the design of the end to which the outside wiring is attached. It will be noted from the sketch that this portion of the terminal is not only perforated, but fluted. There is no difficulty in tinning this in the factory and a thorough job of soldering the connecting wire, can be done with one movement of a hot iron. It is unnecessary to hold the iron in contact a considerable time in order to make a thorough job. Hence the complete terminal is not heated to such a point, as to unsolder the connection to the winding, and loosen the terminal fastening in the spool head.

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THE WESTERN WIRE SALES COMPANY, 356 Dearborn Street, Chicago, Ill., has recently been reorganized, Richard Wick, formerly one of the officials of the company, retiring. The officers of the company now are: C. T. Murdock, president; A. N. Allen, secretary, treasurer and manager. The company will carry on the manufacture of the same line of bare and insulated wires and cables as heretofore.

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THE HAGSTROM BROTHERS MANUFACTURING COMPANY of Lindsborg, Kan., has increased its capital stock from $50,000 to $150,000, and will manufacture a lockout telephone in addition to the electrical specialties which are already being manufactured. The directors of the company are: President, Wm. Hagstrom; vice-president, N. G. Thorstenberg; treasurer, Gustaf Hagstrom; secretary, Gustaf Eckwall, and A. E. Agrelius.

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### The Homer Roberts Company to Have Exhibit at Iowa and Kansas Conventions.

The Homer Roberts Company, of Chicago, will have two complete party line systems in operation at its exhibit at the Iowa convention March 9, 10 and 11 in Des Moines. The exhibit will be located in booth 12 in the Essex building and it is expected to attract much attention as the firm has two installations of its system in Iowa, those at Prairie City and Cedar Rapids, which have favorably impressed the Iowa telephone men.

The Roberts system will also be exhibited and demonstrated at the Kansas convention at Topeka, March 16, 17 and 18, where rooms 24 and 26 have been engaged at Hotel Throop.

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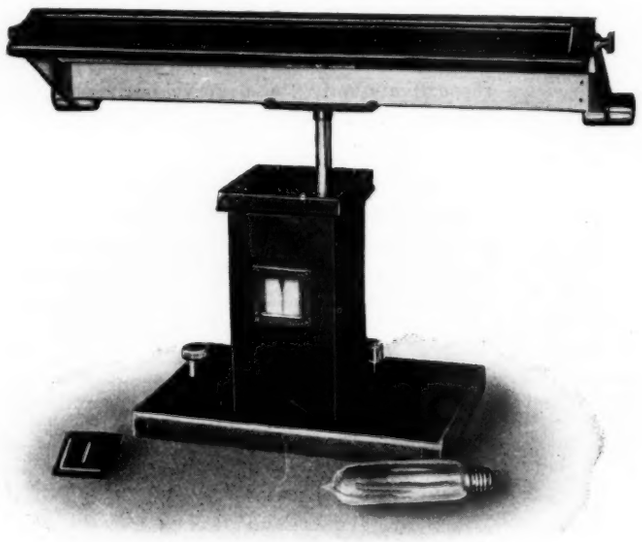
### A New Lamp and Scale for Galvanometers.

A lamp and scale having several new features has been recently placed on the market, and is now being extensively used. On account of the special construction, it may be used equally well in a perfectly lighted room, or with no light but that contained in the instrument itself. This feature makes it especially desirable for use in wire factories and laboratories lighted by daylight.

When used in daylight, a straight filament lamp and narrow slot projector is used, which throws a brilliant white line on the scale. If used in a place too dark to read the scale without artificial illumination, a window of ground glass is introduced into the hood, in place of the slot, in conjunction with a special lamp to concentrate the light. This window has on it a black arrow and line which is projected on the scale. As seen in the illustration, the scale is thus brilliantly illuminated on

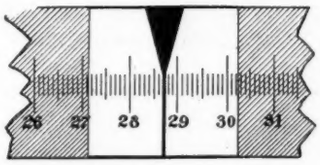


**A New Galvanometer Lamp and Scale.**

both sides of the arrow, and the figures may be easily read, although the room is otherwise in perfect darkness. Every instrument is equipped with both outfits, which are easily interchangeable.

Another feature of this instrument is the construction of the reading device. In place of the ground glass scale usually em-

ployed, one of fine white cardboard on a mahogany back is substituted. The light, falling on this, makes a sharply defined image which the observer, standing behind the instrument, reads by means of a long adjustable mirror. With this scale,




The Illuminated Scale.

the observer may stand to one side of the instrument and still be able to read as easily as if he were in front.

The Leeds & Northrup Company, Philadelphia, Pa., manufacture this instrument, and will be glad to furnish further details on request.

### H. C. Slemin Appointed Sales Manager of Stromberg-Carlson Company.

Announcement has been made from the headquarters of the Stromberg-Carlson Telephone Manufacturing Company, of Rochester, N. Y., that Mr. H. C. Slemin will hereafter hold the position of sales manager as well as that of advertising manager, with the title Sales and Advertising Manager.

Mr. Slemin's promotion is one which will be welcomed by the entire list of those who have been familiar with his record. His advancement is a most deserved recognition of the exceedingly valuable work he has done for the company.

### The March Moore Calendar.

The March calendar of Alfred Moore, of Philadelphia, follows the idea of the previous calendars in depicting the season of the year.

The cover sheet of the calendar contains remarks regarding the magnet wire handled by Mr. Moore. The bare wire is accurately and carefully gauged first of all, then it is tested for

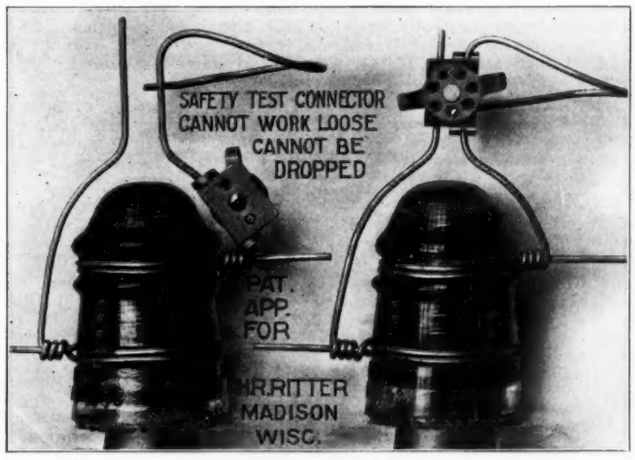
The March Calendar.

temper. Nothing but dead soft, annealed wire, exactly true to gauge, ever goes under the machine. The wires are compactly and evenly insulated to a uniform outside diameter and put up on spools or reels, holding one continuous length.

George T. Wescott, 152 E. Lake St., has been appointed Western Representative for the Siemon Hard Rubber Corporation, manufacturers of telephone receiver shells, mouth pieces and all other composition material used as a substitute for hard rubber.

### A Practical Test Connector.

Immediate approval of practical men has been shown to a new test connector, invented by H. R. Ritter, of Madison, Wis. This connector, which has just been placed on the market, has an especially substantial clamping device, the movable plate working on a threaded bolt of large diameter, and with heavy threads. The wings make it possible for the lineman to twist the connector up tight on a wire, and the holes through the two plates gives an opportunity for fastening by passing the end of a wire through, which makes a lock much more reliable than that furnished by locknuts. The movable plate has an odd number of holes, properly spaced to allow fastening for one-fourteenth of a turn, so that an absolutely tight clamp can be made. The movable plate is of copper, so that it is not liable to crystallize in time, as brass might do. The




The Safety Test Connector.

lugs at one side of the connector clamp over the wire, and prevent the connector from falling to the ground if loosened and carelessly handled.

Other good points are evident upon examination, and are also set forth in printed matter which Mr. Ritter has prepared for mailing.

### L. M. Ericsson Telephone Manufacturing Company Reorganizes Its Sales Department.

Announcement has been made by the L. M. Ericsson Telephone Manufacturing Company, of Buffalo, N. Y., of the appointment of Mr. Thomas S. Hemenway as general sales manager. Mr. Hemenway graduated from Pritchett College, Glasgow, Mo., with the degree of Bachelor of Arts, and latter graduated from the Engineering Department of Purdue University. His theoretical training connected with his practical experience, make him eminently fitted for his new position.

Before the building of the Buffalo factory Mr. Hemenway was associated with the Ericsson company, and since then has been connected with the engineering department. He has traveled extensively on special work for the Ericsson company and has attended most of the recent telephone conventions, and is widely known in the field.

Mr. H. P. Dixon, for the past two years southern representative of the Ericsson company, has been appointed assistant sales manager. Mr. Dixon has shown marked ability in furthering the Ericsson interests in the south, and his many friends will be pleased to hear of his advancement.

The Ericsson company believes that this will be a prosperous year in the telephone field, and intends to push more vigorously the sales of its products which are steadily gaining the approval of exacting operators.

# Condensed News Reports

**Officers of companies are earnestly requested to forward us promptly all financial and other statements as soon as issued and any items of interest as to their plants and systems**

### NEW COMPANIES.

JONESBORO, GA.—The Riverdale Telephone Company has applied for a charter. The capital stock is given at $1,000 and the directors are G. M. Hine of Clayton county and B. S. Hine and R. T. Aderhold of Fulton county.

OAKWOOD, GA.—The Gainesville and Oakwood Telephone Company has been organized and work of construction will soon begin. The following are the officers: J. W. W. Simmons, president; J. N. Wallis, vice-president; H. W. Crankshaw, secretary; and L. I. Hughes, treasurer. The trustees are: C. L. Deal, H. W. Glaze and S. W. Westbrooks.

ROCKDALE, IND.—The Johnson Fork Telephone Company has incorporated to build and equip a telephone system to reach throughout portions of Franklin and Dearborn counties. The directors, whose postoffice address is Harrison, Ohio, are: J. D. Gold, Albert Mettler, H. G. Larue and Jas. Martashed. The capital stock of the organization is $1,800.

SHELBURN, IND.—The Central Mutual Telephone Company has filed articles of incorporation with the secretary of state. P. T. Lloyd, H. V. Stark, Elias Moore and W. H. Bennett are directors. The capital stock is given at $1,000. The company will operate in Sullivan county.

DES MOINES, IA.—The Gaza Farmers' Mutual Telephone Company, of Gaza, O'Brien county, has been incorporated with a capital stock of $500. The incorporators are: H. H. McCall, Simon Tjassen, C. L. Rockwell, A. Arlake, C. S. Clark and E. Sanford.

STACEY, KY.—The Stacey Telephone Company has been organized here with a fully paid in capital of $2,000, to build lines in the country around Stacey. The incorporators are: S. F. Maggard, D. B. Bales and George McIntyre. S. F. Maggard, of Stacey, is manager.

UNION, KY.—The Union Telephone Company has been incorporated to build lines in Livingston county. The capital stock is $1,000, and the incorporators are: J. M. Moore, S. S. Miller, H. A. Yancey, J. G. Evans, Dr. J. W. Robertson, A. L. Ramage and George W. Jolly. J. M. Moore will be manager.

NEW BALTIMORE, MICH.—A company to be known as the Anchor Bay Independent Telephone Company was organized recently, with H. J. Knopf for president; H. M. LaBounty, treasurer and A. J. Christie, secretary. The object of the company is to build an Independent rural telephone line to connect this village, Anchorville and Fair Haven.

THREE OAKS, MICH.—The Chikaming and Weesaw Telephone Company, of Three Oaks, has filed articles of association with the county clerk. The capital stock of the organization is placed at $2,000, of which amount $625 is paid in.

GRACEVILLE, MINN.—A new telephone company with L. J. Keating as secretary, has been organized to build an exchange in this place.

PINE RIVER, MINN.—The Pine River Rural Telephone Company is a new corporation which perfected its organization recently. The company is capitalized at $10,000, and the names of the following Pine River business men comprise the incorporators: F. R. Anderson, H. H. Hill, Frank L. Hill, James F. Geary and Charles W. LaDu. The general nature of the business of the corporation shall be the construction, acquisition, maintenance and operation of an exchange in the village of Pine River and rural telephone lines connecting this town with outside rural points. The work of installing the local system and a line to Emily and Outing will commence just as soon as the frost is out of the ground, and it is expected that the local system will be in working order by June 1. The line to Emily and Outing will also be completed during the summer.

ST. PAUL, MINN.—The Perham Rural Telephone Company has filed articles of incorporation with the secretary of state.

### FINANCIAL.

TONGANOXIE, KAN.—The directors of the Suburban Telephone Company have declared a dividend of six per cent.

FARMINGTON, MINN.—An 8 per cent dividend has been declared by the directors of the Star Telephone Company.

WEATHERFORD, OKLA.—The Farmers' Mutual Telephone Exchange has increased its capital stock.

COLUMBUS, OHIO.—The Stark County Telephone Company has paid a dividend of four per cent on the outstanding common stock for the year 1908. The larger part of the $100,000 outstanding is held by the United States Telephone Company, and the dividends will swell the earnings of the United States company about $11,000. The Stark county company is one of the best of the eight subsidiary companies owned and controlled by the United States company. Its earnings are large and its surplus, after the payment of bond interest, preferred stock dividends and four per cent on the common stock, is amply sufficient to take care of the growth of the company.

HOWARD, PA.—A semi-annual dividend of three per cent has been declared by the directors of the Bald Eagle Valley Telephone Company.

CUMBERLAND, WIS.—The McKinley Telephone Company will increase its capital stock to $10,000.

NEWTON, WIS.—The Newton-Manitowoc Telephone Company has increased its capital stock from $2,000 to $4,000.

### FRANCHISES.

PITTSBURG, KAN.—The Military Telephone Company has secured permission to build a rural telephone line along the country roads south of Pittsburg into the city.

WINSTON-SALEM, N. C.—A franchise has been granted by County Commissioners to John D. Williams and others to establish a telephone line from Lewisville to Clemmons. The line will run by way of the Conrad ferry road, the Shallowford road, the Clemmons road, the Styre's ferry road, and the Winston-Salem road to Clemmons.

BRADNER, OHIO.—H. E. Graham has been granted a franchise for installing and operating a telephone system in this place.

SOMERSET, OHIO.—The Citizens Independent Telephone Company of New Lexington, has been granted a franchise to establish an exchange in this place.

GRANTS PASS, ORE.—The council has granted a 35-year franchise to the Citizens Telephone Company. The new company promises to use the common battery system and binds itself to begin actual construction work within three months.

SALEM, ORE.—A franchise has been granted by the county court to the Big Four Telephone Company for a line from Butteville to Gervais.

BELLEFONTE, PA.—The American Union Telephone Company is building a new rural telephone line from Millheim to Woodward and Fiedler.

WASHINGTON, PA.—After months of delay the East Washington council has granted a 50-year franchise to the National Telephone Company.

VANCOUVER, WASH.—The Minnehaha Co-Operative Telephone Association was recently granted a franchise to operate lines in this county.

TILBURY, ONT., CAN.—The Tilbury council has granted a franchise to the Tilbury Telephone Company, Ltd., to use the streets for a period of 20 years. The maximum price of telephones on this line is not to exceed $12 per year.

### CONSTRUCTION.

MOBILE, ALA.—It is reported that the Home Telephone Company will expend $75,000 in extensions and improvements.

PHOENIX, ARIZ.—Extensive improvements, including several new rural lines near Mesa, are being made by the Consolidated Telephone Company. Men have been at work making improvements and inspecting the lines for several weeks. Wickenburg, Phoenix, Tempe and Mesa have received attention. Greater improvements are being made on the south side than anywhere else. A new rural line is now being run from Mesa to the McQueen ranch. Other lines will be constructed shortly.

MORRILTON, ARK.—The Home Telephone Company has ordered a new switch board to be installed in its exchange.

FLAGG CENTER, ILL.—The farmers in this vicinity have purchased the Babcock telephone line and will put in a new switchboard at Flagg Center and make other necessary repairs.

CHANDLER, IND.—At a recent meeting of the stockholders of the Chandler Telephone Company it was decided to build the line to Boonville immediately. A local exchange will be installed. This will give Boonville two telephones. The Chandler Telephone Company received a franchise some time ago.

NEW ALBANY, IND.—A telephone line has been completed from Corydon to Crandall by the Harrison County Telephone Company.

CORNING, IA.—The Corning Telephone Company is about to make important changes in its local system. About 15,000 ft. of cable will be put in, varying in size, containing from 25 to 250 pairs of wires. This will eliminate all telephone wires from the streets, as it is proposed to put the cable under ground.

BELLEVILLE, KAN.—The Belleville Independent Company has authorized the installing of a new switch board that will cost $2,500.

BURLINGAME, KAN.—The Burlingame Telephone Company is rebuilding its metallic and ground lines between Scranton and Carbondale.

NORTONVILLE, KAN.—Manager Yoakum has made a survey of the Potter telephone system and will rebuild it. He will also change the location of the central office.

WINFIELD, KAN.—W. T. Reeder and J. M. Pierce have been making plans for the extension of the telephone system here.

ELIZABETHTOWN, KY.—The Hardin County Telephone Company is extending and building new lines at a headlong pace. It has just erected an entirely new metallic line between this city and Stephensburg. It also entered Leitchfield recently with a new line, and its next step will be to erect a line between Elizabethtown and Glendale. The company is noted for erecting new lines with its surplus or dividends, and invariably puts all of its earnings in new lines, or expends it for repairs.

MARCELLUS, MICH.—The Cass County Home Telephone Company has completed arrangements for the completion of the county system in Marcellus township and expect to commence work on setting the poles as soon as the weather will permit.

BEMIDJI, MINN.—A rural telephone line will probably be established this spring along the Walker & Akeley logging railroad grade from Hines seven miles eastward, according to the statement made recently by Charles S. Carter, of the lumber firm of Kaye & Carter, of Hines. Mr. Carter reports that there are ten farmers along the proposed route of the system who are desirous of having telephones installed in their homes, and a few others who may become parties to the line. No company has yet been given a right-of-way to build the proposed telephone line.

FRIBERG, MINN.—The Edwards Telephone Company will at once construct a telephone line from Erhard to Edwards.

HARVARD, MINN.—The Harvard Telephone Company is extending its rural lines and making several connections.

LONG PRAIRIE, MINN.—The Leslie Rural Telephone Company will construct a line to Reynolds.

MALONE, MINN.—The Clearwater Farmers' Telephone Company will extend its line from this place to Sunbeam.

PERHAM, MINN.—The Perham Telephone Company will probably construct a line to Evergreen.

ST. CLOUD, MINN.—Joseph Kirsch and N. Rausch, of the town of Rockville, were here recently to make arrangements with the Luxemburg Telephone Company for an extension of its line to Grand and Pleasant Lakes this summer. There are a number of farmers in that part of the county who have no telephone connections and who, with the numerous rural lines in operation about them, can not well organize a company for themselves. If the arrangements can be made with the Luxemburg company the line will be built this spring.

ST. JOSEPH, MO.—The Citizens Telephone Company is about ready to begin the actual work of improving its system and putting in the plant which has been in contemplation for some time. A half million dollars will be spent here inside of the next six months. The building of a new and modern central station, and the putting of all wires underground in the business section will be among the first moves. The system will be completely overhauled and extensive repairs made and much new material will be installed.

WILBER, NEB.—The Saline Telephone Company is having a new switchboard installed in the local exchange.

SPRINGDALE, NEV.—The Nevada Telephone-Telegraph Company will construct a line between this place and Pioneer.

ARCADIA, OHIO.—The Arcadia Mutual Telephone Company will install a new switchboard and rebuild its lines.

SOMERSET, OHIO.—The Citizens Independent Telephone Company of New Lexington, which was recently granted a franchise in this place, will begin constructing an exchange and erecting lines early in the spring. J. B. Rhoades of New Lexington, is secretary and treasurer of the company.

QUEEN, PA.—The Claar Telephone Company recently installed a new 100-drop switchboard. An additional trunk line will be strung from Queen to Imler, where connection will be made with the American Union lines. Manager D. A. Claar, who is also a director of the Pavia and Imler line, announces that many improvements will be made as soon as spring opens.

WINDBER, PA.—The Central Telephone Company, with headquarters at Reitz, will extend its line to Crumb postoffice.

BALLINGER, TEX.—The West Texas Telephone Company has been spending a great deal of money of late in Ballinger in extensions, rebuilding and re-fitting the exchange. The company has made arrangements to put in the latest improved telephones in this city this coming fall. The system as improved will be capable of accommodating 700 telephones.

WEST PLAINFIELD, WIS.—The farmers of Portage county will build a telephone line from Bancroft to Grand Rapids.

LANDER, WYO.—The Indian Department has notified Agent Wadsworth of the Wind River Reservation, that bids for the construction of the first 40 miles of a telephone line from the agency to the Yellowstone park will be advertised immediately. This line will give the Yellowstone direct telephonic communication with the remainder of the state for the first time.

SHERIDAN, WYO.—The Wyoming Coal Company has just completed a new telephone line from Sheridan to the mines. It is a full metallic system, with 25-ft. cedar poles, and is strung with No. 12 wire. Six pin cross arm have been put up, and it is the intention to string additional wires on the poles for the accommodation of the other mines and the residents along the route.

BIRTLE, MAN., CAN.—The municipality of Birtle is completing arrangements for the installation of a rural telephone system. W. C. O'Keefe has the matter in charge.

## ELECTIONS.

BOISE, IDAHO.—At a recent meeting of the stockholders of the Independent Telephone Company directors for the current year were elected as follows: A. J. Swain, J. S. D. Manville, George D. Ellis, J. E. Tourtellotte, C. J. Sinsel, George Campbell, E. H. Beggs, M. F. Albert and C. E. Brainard, the last two being residents of Payette. The directors have organized as follows: President, E. H. Beggs; first vice-president, A. J. Swain; second vice-president, C. E. Brainard; secretary and general manager, C. J. Sinsel; treasurer, J. S. D. Manville; counsel, Ira E. Barber; advisory board, A. J. Swain, J. E. Tourtellotte and M. P. Meholin.

KAMPSVILLE, ILL.—The Calhoun County Co-operative Telephone Company, at a recent meeting, elected the following officers: John M. Roth, president; John Gotway, vice-president; John Bennet, secretary; C. P. Becker, treasurer; Anton Dirksmeyer and James Toll, directors.

ROCKFORD, ILL.—At the recent annual meeting of the Rockford Home Telephone Company T. M. Ellis was elected president, succeeding E. W. Brown, who resigned to accept the presidency of the City Club. Other officers elected are: Vice-president, Roscoe S. Chapman; secretary, John H. Camlin. Directors—Frank Worthington, T. M. Ellis, John H. Camlin, C. L. Miller, E. E. Bartlett, H. H. Clough, Roscoe S. Chapman, Bethune Duffield, Detroit, and W. G. Sharp, Elyria, O.

BLUFFTON, IND.—At a recent meeting of the directors of the United Telephone Company at Indianapolis the old officers were re-elected. They are Hugh Dougherty, president; W. B. Cooley, vice-president; C. H. Plessinger, secretary; L. C. Davenport, treasurer; James W. Sale, general manager.

NEW ROSS, IND.—The directors and officers of the New Ross Telephone Company for the current year are: Directors—F. M. Walkup, C. B. Bratton, James Porter, Dr. J. C. Burkle and Bruce Bowman; president, Dr. J. C. Burkle; vice-president, F. M. Walkup; secretary, James Porter; superintendent, Bruce Bowman; treasurer, J. A. Morrison.

GOWRIE, IA.—At the annual meeting of the Lena Gowrie Mutual Telephone Company directors were chosen as follows: J. E. Strand, Henry Klippel, Claus Sandeen, C. I. Lungren, J. E. T. Johnson and P. G. Stenholm. The directors organized by electing Henry Klippel, president; J. E. T. Johnson, vice-president; Miss Lilly Lagerquist, secretary, and C. A. Chaldgren, treasurer.

GRINNELL, IA.—At the annual meeting of the stockholders of the Long Distance Copper Telephone Company the old officers and directors were re-elected as follows: President, J. F. Wilson; vice-president, A. A. Moore; secretary, C. W. H. Beyer; treasurer, Harold L. Beyer; manager, George L. Saunders. Directors—J. F. Wilson, A. A. Moore, C. W. H. Beyer, J. P. Lyman and Jacob Korns. The company's affairs are in a prosperous condition. A new copper circuit was built last summer from Iowa City to Marengo, a distance of thirty-five miles, completing two metallic circuits from Iowa City to Grinnell.

IOWA CITY, IA.—The Scott Township Telephone Company (No. 4) has elected officers for the ensuing year, as follows: President, John Roegle; vice-president, F. M. Kouba; secretary and treasurer, A. E. Barnes. Directors—the above named and Joseph Schneberger and Joseph Krall.

PORTLAND, IA.—All the old officers of the Averydale Telephone Company were re-elected at the recent annual meeting of the stockholders. They are: M. L. Palmer, president; Charles Felt, vice-president; Burton Letts, secretary.

ROCHESTER, IA.—The Prairie Belle Telephone Company held its annual meeting recently and all the officers of the past year were re-elected: Chas. McGillwray, president; Will Wildarsin, secretary, and James Hill, treasurer.

SCOTT, IA.—The Iowa City and West Branch Telephone Company has elected officers as follows: President, James Douglas; vice-president, J. W. Schell; secretary, Glenn Stevens; treasurer, George M. Hunter. Directors—Samuel Hunter and L. R. Brown.

TRAER, IA.—The following directors have been chosen by the stockholders of the Traer Mutual Telephone Company: F. C. Van Vliete, John Sherrett, T. R. McElhinney, John Kober, M. H. Howard, N. R. Morrison and W. J. Ladd.

ATCHISON, KAN.—The stockholders of the Atchison Telephone Company have elected the following directors for the ensuing year: Theodore Gary, Macon, Mo.; H. L. Gary, Macon; J. L. Berry, Atchison; S. A. Frazier, Atchison, and W. B. Hemphill, of Topeka. The following officers were also chosen: Theodore Gary, president; J. L. Berry, vice-president, and C. E. Betts, secretary-treasurer.

HESSTON, KAN.—The Hesston Rural Telephone Company at a recent meeting elected officers for the ensuing year, as follows: Chas. Billau, president; H. W. Prouty, vice-president; M. M. Zimmerman, secretary; Nick Molzen, treasurer, and J. P. Deschner, director.

OBERLIN, KAN.—At the annual meeting of the stockholders of the Central State Telephone Company officers were elected as follows: A. S. Steele, president and manager; W. T. Steven-

son, A. H. Gray of Norton and I. W. Crumley of Colby, vice-presidents; H. O. Douglas, secretary, and Otis L. Benton, treasurer. Directors—H. O. Douglas, W. T. Stevenson, Otis L. Benton, A. S. Steele and I. N. Cope.

GRANBY, MASS.—At the annual meeting of the Granby Telephone Company the following directors were chosen for George R. Smith, Henry H. Moody, Dwight C. Nutting, Arthur T. Warner, Horace S. Taylor, George F. Bell and Winfred F. Forward; clerk and treasurer, Willard A. Taylor.

ADRIAN, MICH.—At the annual meeting of the Adrian Telephone Company which marks the close of a very successful year, the following directors were elected: D. M. Baker, G. A. Wilcox, B. E. Tobias, C. S. Park, Bryon Shaw, C. S. Hart and W. O. Hunt. The officers elected by the board of directors are: President, D. M. Baker; secretary, C. S. Park; treasurer, G. A. Wilcox, and manager, W. O. Hunt.

ALPENA, MICH.—The officers of the Alpena Mutual Benefit Telephone Company for the ensuing year are: President, C. H. Reynolds; secretary, J. H. Kerr; treasurer, Wm. H. Johnson.

EATON RAPIDS, MICH.—At the annual meeting of the Springport Telephone Company the following stockholders were chosen trustees for the year 1909: R. J. Wilson, F. E. Powers, Arthur Runches, L. P. Hoag and A. C. Banister.

SAGOLA, MICH.—At the annual meeting of the Sagola Telephone Company J. J. Clark was re-elected president; F. D. McCole, vice-president; T. J. Dewish, secretary-treasurer, and C. F. Knisely, member of the board of directors.

FAIRMONT, MINN.—The old directors of the Fairmont Telephone Company were all unanimously re-elected at the recent meeting. They are H. W. Sinclair, P. R. Matson, R. J. McCadden, U. J. Pfiffner and M. J. Aldrich. The directors have organized with P. R. Matson president and treasurer and H. W. Sinclair secretary.

HOKAH, MINN.—The Columbia Telephone Company has elected the following officers: President, Reuben Hoag; vice-president and secretary, P. J. Cummings; treasurer, Michael Hughes. Diectors—Geo. Ross, Will Baier Jr., and John Conniff.

HOUGE RIDGE, MINN.—The Houge Ridge Telephone Company held its annual meeting recently at which time the following officers were elected: President, George Kittelson; secretary, Henry Houge; treasurer, Knut Wisland.

LOONEY VALLEY, MINN.—The Houston Md. Prairie Mutual Telephone Company at a recent meeting elected the following officers: John Wohlers, president; John Sliter, vice-president; John Schild, secretary.

MANKATO, MINN.—The Lura Lake Telephone Company held its annual meeting at the Whitney school house recently. The officers elected were: O. W. Healy, president; O. E. Osmondson, vice-president; H. H. Hansen, secretary; A. E. Anderson, treasurer.

MORRISTOWN, MINN.—At the annual meeting of the stockholders of the Morristown Telephone Company officers were elected as follows: J. J. Miller, president; J. C. Kops, first vice-president; Aug. Timm, second vice-president; L. F. Von Eschen, secretary; L. A. Kisor, treasurer.

OSAKIS, MINN.—The stockholders of the Leslie Rural Telephone Company at their annual meeting re-elected the old officers and directors. They are: President, E. R. Ruggles; secretary, Christ Heen; treasurer, John E. McKindley. Board of Directors—F. W. Craig, Belle River; Ed. Sprague, Drywood; R. M. Johnson, Round Prairie; Fred Judd, Leslie; Peter Johnson, Gordon.

RICE, MINN.—The officers of the Graham and Langola Telephone Company for the ensuing year are: President, J. R. Sparrow, vice-president, Albert Cairns; secretary, C. H. Schumann; Treasurer, Edward Walser. Directors: John Trabant, Slyvester Fiddler and Will Foss.

RUSHFORD, MINN.—The old officers of the City and Farmers Telephone Company were re-elected at the annual meeting. They are: M. Johnson, president; Peter Miller Jr., secretary; Charles Greiser, treasurer.

WEST UNION, MINN.—The West Union Telephone Company held its annual meeting recently and elected the following officers: President, D. J. Hines; vice-president, Louis Anderson; secretary, H. J. Marthaler; treasurer, B. L. Servatius.

BRAYMER, MO.—The officers of the Regal Telephone Company for the coming year are: Hon. T. W. Crowe, president; Frank McCray, vice-president; J. W. Jones, secretary and treasurer; G. B. Walker, Hon. T. W. Crowe, J. T. Lane, J. A. Letholt and F. McCray, directors.

DU BOIS, NEB.—At the annual meeting of the Du Bois Telephone Company the following directors were elected for the year: William Stephenson, J. M. Pesek, A. H. Pelton, H. H. Hawkins and Conrad Droge. The directors have organized with the following officers: Wm. Stephenson, president; J. M. Pesek, vice-president; A. H. Pelton, treasurer; H. H. Hawkins, secretary.

VALLEY, NEB.—The stockholders and directors of the Douglas County Telephone Company held their annual meeting recently. The following compose the board of directors: Frank Reichardt, George Cowles, J. C. Robinson, W. E. Weekly, Mons Johnson, L. P. Byars, all of whom were re-elected, and A. E. Weekly in place of A. R. Dodson. The officers are: J. C. Robinson, president; Frank Reichard, vice-president; W. E. Weekly, secretary; Mons Johnson, treasurer, and L. P. Byars, general manager.

CANANDAIGUA, N. Y.—The Ontario County Mutual Telephone Company has elected the following officers: President, Garrett F. Wheaton, Bristol Center; vice-president, Charles I. White, Ionia; treasurer, Editor Spitz, Holcomb; secretary, A. W. Appleton, Holcomb. The board of directors is composed of Directors, H. A. Harrison, H. P. McDonough, H. R. Beebe, F. C. Ward, G. E. Schoolcraft, T. H. Ferris and F. L. Bookman.

COOPERSTOWN, N. Y.—At a recent meeting of the Otsego Home Telephone Company the following officers were elected for the ensuing year: H. A. Harrison, president; T. Harvey Ferris, vice-president; Harry P. McDonough, secretary-treasurer.

## MISCELLANEOUS.

LAKE CITY, ARK.—L. W. Fielding, manager of the Home Telephone Company of Jonesboro, and several others, have purchased the telephone exchange at Lake City. They have installed a new switchboard and made other improvements. The name of the new organization is the People's Telephone Company, and the manager is Floyd Smith.

FORT WAYNE, IND.—The damage to the lines of the Home Telephone Company, caused by the recent sleet storms, is estimated at several hundred dollars. Temporary repairs were made to the lines within a few days after the storm, but it will be several weeks before permanent repairs can be made. In Kosciusko county the damage wrought by the storm is estimated from $6,000 to $8,000. In this county alone 663 poles were broken, 600 wires were down, and 49 toll lines were out of service.

ATCHISON, KAN.—The Bendena Telephone Exchange Company is to be incorporated.

LEROY, KAN.—The Harris Telephone Company has sold its line to Marion Beath from near Neosho Falls and he expects to improve the system.

WEST MINERAL, KAN.—A deal has been closed by which the ownership of the Mineral telephone system passed from the hands of Mrs. Olive C. Patterson to G. A. Welbourne of Carl Junction, Mo. The consideration was $6,000. Mr. Welbourne is also owner and manager of the Carl Junction telephone system.

PADUCAH, KY.—Telephones will supplant telegraph instruments on the Paducah division of the Nashville, Chattanooga & St. Louis, if the recommendation of Superintendent W. J. Hills is followed. Superintendent Hills visited the electrical show at Chicago and was much impressed with the advantages of the telephone method of dispatching trains.

BYRON, N. Y.—The Byron Telephone Company proposes to have a building of its own for an office. Commencing with the first of July the rates will be raised for telephones from $10 to $12 a year.

UTICA, N. Y.—On February 18 Utica experienced the severest sleet storm that has visited this vicinity for 50 years, and which resulted in completely paralyzing the telephone service. Thousands of telephones were rendered useless, and it is estimated that it will be at least two months before they are all in order. In the surrounding villages the damage was even greater than in Utica itself.

PIQUA, OHIO.—The Troy Telephone Company has sold its exchange at Addison to the Springfield-New Carlisle system.

CHEROKEE, OKLA.—The Cherokee Rural Telephone Company having lines throughout Alfalfa county, has decided to install an Independent switchboard and fight the Pioneer company on the local exchange business in Cherokee as well as the rural lines. The trouble arose over rates charged by the Pioneer for the use of its local exchange here.

GUTHRIE, OKLA.—The annual report of the State Auditor of Oklahoma shows that the telephone companies operating for hire in the state have reported 85,277.95 miles of line, 14,862.46 miles of poles and 6,022 instruments.

GUTHRIE, OKLA.—Senator Goluding of Enid, who is a stockholder in the Garfield County Independent Farmers' Mutual Telephone Company, has introduced a bill in the present legislature, providing that all farmers' mutual telephone companies, that do not operate their lines for hire, be exempt from taxation.

GUTHRIE, OKLA.—The second Oklahoma legislature has reported favorably on a bill introduced by Senator Thomas of Lawton, giving the cities of the first class the privilege to levy an occupation tax upon all public service corporations that use in any manner its streets and alleys. This bill will affect telephone companies.

LAWN, PA.—B. S. Stauffer has purchased the Mastersonville telephone line between Lawn and Manheim. Mr. Stauffer will build a line from Manheim to Mt. Joy in the spring.

MAHONOY CITY, PA.—The Carbon Telephone Company of the Panther Creek Valley and the Consolidated Telephone Companies are to merge. By this arrangement connections between Lansford and Mauch Chunk will be established.

LEAGUE CITY, TEX.—There was a meeting of citizens held here recently for the purpose of organizing a telephone system for League City, Webster and Friendswood. Both Webster and Friendswood were represented at this meeting. The proposition is to make a stock company.

DORCHESTER, WIS.—The Brecke Telephone Company has filed articles with the secretary of state to change its name to The Interurban Telephone Company.

CALGARY, ALTA, CAN.—The Provincial Government has announced a reduction in its residence telephone rates from $25 to $20 a year.